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SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
EPA CONTRACT NO.: 68HE0319D0004

May 24, 2021

Mr. Peter Lisichenko
U.S. Environmental Protection Agency, Region II
Superfund and Emergency Management Division
2890 Woodbridge Avenue
Edison, New Jersey 08837

EPA CONTRACT NO: 68HE0319D0004
TD No: TO-0036-0017
DC No: STARTV-02-F-0074
SUBJECT: FINAL REMOVAL ACTION REPORT, RV1
NIAGARA FALLS BOULEVARD SITE,
NIAGARA FALLS, NIAGRA COUNTY, NEW YORK

Dear Mr. Lisichenko,

Enclosed please find the Final Removal Action Report, RV1 which summarizes the actions taken by the U.S. Environmental Protection Agency, Region II (EPA) as part of the Removal Action conducted at the Niagara Falls Boulevard Site (the Site) in Niagara Falls, Niagara County, New York. The removal activities summarized in this report were conducted at the Site from May 26, 2016 through August 13, 2017. The EPA comments regarding the previous version of this report (DC No: STARTV-02-D-0053**)** have been incorporated.

If you have any questions or comments, please contact me at (732) 585-4411.

Sincerely,

WESTON SOLUTIONS, INC.

Sean Quinn
START V Site Project Manager

Enclosure
cc: TD File: TO-0036-0017

FINAL REMOVAL ACTION REPORT, RV1

NIAGARA FALLS BOULEVARD SITE

Niagara Falls, Niagara County, New York

Prepared by:

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Prepared for:

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1.0 INTRODUCTION

From May 26, 2016 through August 13, 2017, the U.S Environmental Protection Agency, Region II, (EPA) Response and Prevention Branch (RPB), currently Superfund and Emergency Management Division (SEMD), completed the first phase of the Removal Action (RV1) at the Niagara Falls Boulevard Site (the Site) in Niagara Falls, Niagara County, New York. EPA initiated RV1 to address the findings from prior site investigations conducted at the Site by the New York State Department of Environmental Conservation (NYSDEC), Site Assessments conducted by the EPA Emergency and Remedial Response Division, Region II (ERRD) and Weston Solutions Inc. (Weston), Site Assessment Team (SAT), and Removal Assessments conducted by EPA RPB and Weston's Removal Support Team 3 (RST 3). Currently, SAT and RST 3 are referred to as Superfund Technical Assessment & Response Team V (START V). The findings from these investigations confirmed the presence of radiological contamination on properties that encompass the Site, including the parking lot, areas inside the two buildings located on the Site, and portions of a wooded area located on the north side of the Site.

This report summarizes the activities undertaken by EPA, RST 3, and EPA's Emergency and Rapid Response Services (ERRS) contractor, Guardian Environmental Services (GES), to mobilize, implement, and complete the planned scope of work (SOW) for RV1, including air monitoring for particulates, soil and air sampling, excavation and off-site disposal of contaminated soil, and the restoration of areas of concern (AOCs) in order to mitigate public exposure to the contamination found to be present on the Site.

1.1 Site Location and Description

The Site is in a mixed commercial and residential area of Niagara Falls, Niagara County, New York. The Site consists of ten parcels and are summarized below:

Section Block Lot (SBL) #	Address	Acreage	Description
146.19-3-1	9524 Niagara Falls Boulevard	1.82	Rapids Bowling Center
146.18-2-5	9524 Niagara Falls Boulevard	0.38	
146.18-2-6	9524 Niagara Falls Boulevard	0.8	
146.18-2-4	9524 Niagara Falls Boulevard	0.53	
161.06-3-15	9512 Niagara Falls Boulevard	0.07	
146.19-3-2	9540 Niagara Falls Boulevard	1.83	Greater Niagara Building Center
146.18-2-7	9540 Niagara Falls Boulevard	0.12	
146.18-1-17	Porter Road	4.35	Joseph C. Weber Inc.
146.19-3-3	9547 Niagara Falls Boulevard	0.02	
146.19-3-4	9626 Niagara Falls Boulevard	0.67	Empty Lot

The 9524 Niagara Falls Boulevard (9524NFB) property is currently operated by Rapids Bowling Center (RBC) and includes an asphalt parking lot and wooded area; the 9540 Niagara Falls Boulevard (9540NFB) property is occupied by a building supply center, Greater Niagara Building Center, Inc. (GNBC) and an asphalt parking lot; the Joseph C. Weber Inc. (JCW) property is a forest area that boarders 9540NFB to the north; and the 9626 Niagara Falls Boulevard (9626NFB) property is a vacant lot. The Site is bordered to the north by a wooded area; to the east by the First

Assembly Church property (the Church Property) located on 9750 Niagara Falls Boulevard (9750NFB); to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

For the purpose of executing RV1, the Site was divided into exterior AOCs identified as Area 1 through Area 7. Interior AOCs identified in the GNBC building include the GNBC Office Area comprising Office-3 (OF-3) and Storage-2 (ST-2); storage areas located in the rear of the GNBC building including Storage-4 (ST-4), portions of Storage-5 (ST-5), and Storage-6 (ST-6); and warehouse areas including Warehouse-2 (WH-2) and Warehouse-3 (WH-3). Refer to Attachment A, Figure 1: Site Location Map, Figure 2A: Exterior Areas of Concern Map, and Figure 2B: Interior Areas of Concern Map.

1.2 Site History and Background

In 1978, the U.S. Department of Energy (DOE) conducted an aerial radiological survey of the Niagara Falls region and identified several properties having elevated levels of radiation above background levels. It is believed that waste material from nearby metallurgical industries produced a gravel like waste product that contained radioactive isotopes. This material, commonly referred to as "slag", was used throughout the area in construction projects including as a subbase for parking lots and driveways. In the case for the Site, the radioactive slag material was used to fill in low areas and as a subbase prior to the installation of an asphalt parking lot.

In September/October 2006 and May 2007, NYSDEC conducted multiple radiological surveys of the exterior and interior of both the 9540NFB and 9524NFB properties using both an Exploranium-135 and Ludlum Model 2221 (Ludlum-2221) detectors. Exterior readings taken at waist height generally ranged between 10 and 350 microroentgen per hour (µR/hr), while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface); the background reading for the area typically ranges between 10 to 20 µR/hr. At a fenced area behind the building located at 9540NFB, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524NFB property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 counts per minute (cpm) on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector. The interior survey identified elevated measurements as high as 115 µR/hr in an office area and several storage and warehouse areas at 9540NFB. The areas of elevated measurements were determined to be additions to the original structure and had been built over top of the original slag-containing parking lot.

During a reconnaissance performed by the New York State Department of Health (NYSDOH) and NYSDEC on July 9, 2013, exterior screening activities showed radiation levels at 200 µR/hr with a hand-held Pressurized Ion Chamber (PIC) unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the Site. Readings over 600,000 cpm were recorded with a 2x2 sodium iodide (NaI) scintillation detector from the soil and slag pile. The Site was referred to EPA by NYSDEC and NYSDOH on July 21, 2013.

On September 10, 2013, as part of preliminary assessment of the Site under the Pre-Remedial Program, EPA's ERRD and SAT utilized a Ludlum-2221 Scaler/Ratemeter to conduct gamma radiation screening of the 9524NFB property.

On December 4 and 5, 2013, EPA's ERRD and SAT collected further radiological survey information from the 9524NFB and 9540NFB properties, as well as the Church Property located further east of the Site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear northern portion of the 9540NFB property.

On December 5 through 7, 2013, EPA ERRD and SAT documented the areas of observed contamination at the Site. The areas of contamination was defined as those areas where gamma exposure rate measurements exceeded two-times (2x) the background for the Site which was determined to be 8,391 cpm. An area of the Site, approximately 168,832 square feet (sq. ft.), was found to have gamma radiation levels that exceeded 2x the background measurement. Utilizing a PIC, data was also collected at several points to confirm the boundary.

On December 11, 2013, under oversight of EPA's ERRD, SAT collected a total of 16 soil samples (including one field duplicate) and three slag samples from 15 boreholes advanced throughout the Site and the Church Property located directly adjacent to the east/northeast of the Site, using hollow-stem auger drilling methods. The two soil samples collected on the Church Property were to document background conditions. The soil and slag samples were analyzed for target analyte list (TAL) metals, including mercury. In addition, the soil and slag samples were analyzed for isotopic thorium and uranium by alpha spectrometry, and radium-226 (Ra-226) and radium-228 (Ra-228) by gamma spectrometry. Analytical results indicated concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than [>] 2x background concentration).

On April 28, 2014, EPA's ERRD and SAT collected radon and thoron concentration measurements throughout the Site utilizing a DURRIDGE RAD7 Radon Detector. The radon and thoron measurements (in picoCuries per liter [pCi/L]) were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate the concentrations. Results determined that there were no radon or thoron concentrations that exceeded the Site-Specific background, nor were there any adjusted concentrations that equaled or exceeded a value of two standard deviations above the mean Site-Specific background concentration at the time of measurement.

Under the Pre-Remedial Program, EPA's ERRD conducted preliminary assessments at the Site from September 2013 through May 2014. Based on the Pre-Remedial Evaluation, the Site did not meet the minimum criteria necessary to be placed on EPA's National Priorities List (NPL). However, it was decided that additional assessment work was warranted to determine if the Site is eligible under EPA's Removal Program.

In June 2015, EPA's RAB took over the Site and it was assigned to an EPA On-Scene Coordinator (OSC) to conduct a Removal Site Evaluation (RSE). In July 2015, a Health Physicist (HP) from EPA's Environmental Response Team (ERT) joined the technical team for the continued assessment of the Site. As part of RSE under the Removal Program, EPA and RST 3 conducted Removal Assessments in July 2015, August 2015, and March 2016 to further assess radiological

exposures in the interior and exterior of the Site properties. Radiological screening and radon and soil sampling were performed as part of Removal Assessment activities. The goal of these assessments was to determine the extent of contamination (i.e., how far does the contamination extend beyond the contamination area of concern determined by the Pre-Remedial Program), as well as determine interior contamination impacts (i.e., are workers/patrons exposed to elevated levels of radiological contamination). The screening and analytical results from these events confirmed prior findings which indicated the presence of radiological contamination at locations on-Site.

In May 2017, EPA's RAB and RST 3 performed additional soil sampling as part of Removal Assessment activities in the seven exterior AOCs (Area 1 through Area 7) identified at the Site. A total of 20 test pits were advanced to depths 4 feet below ground surface (bgs) at locations throughout the Site and a total of 88 soil samples were collected at 6-inch intervals bgs down to 48 inches bgs, depending on the depth the native confining clay layer was encountered. The soil sampling event was conducted to further verify the vertical extent of potential releases of radiation-containing materials in soil and delineate the extent of the on-Site radiological contamination. Refer to Appendix A2: Removal Assessment Trip Report, September 9, 2016 and Appendix A3: Phase II Removal Assessment Sampling Trip Report, November 10, 2016.

2.0 REMOVAL ACTION OBJECTIVE

The radiological survey and analytical results from prior Removal Assessment events conducted at the Site identified elevated gamma readings and concentrations of Ra-226 and Ra-228 above the EPA Site-Specific Action Levels of 2.48 pCi/g and 15.90 pCi/g, respectively in several locations. Based on these findings, EPA determined that the conditions at the Site met the requirements of 42 U.S.C. §§ 9601-9675 and Section 300.415(b) (2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), which indicated that a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Removal Action was necessary. The potential for release of hazardous substances from the Site presented a threat to public health and welfare as defined by Section 300.415(b) (2) of the NCP.

The purpose of this Removal Action was to mitigate the threat of release of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), Th-232 and U-238 and their decay progeny into the environment. A release of these radiological substances may impact the health of the public through a variety of pathways, including inhalation from dusts and gases, ingestion from dusts, soils, and water, and direct radiation from external doses.

On July 21, 2016, EPA issued an Action Memorandum (Action Memo) authorizing an Emergency Removal Action at the Site. On September 15, 2016, additional funding was approved for RV1 in an updated Action Memo. Refer to Attachment C: EPA Action Memorandum.

2.1 ERRS Scope of Work

The ERRS contractor's SOW for RV1 included the construction of alternative storage room in the GNBC building for the relocation of GNBC Office Area materials, clearing and grubbing of designated staging areas and Area 5, demolition of the GNBC Office Area office including the removal of non-load bearing walls, removal of concrete flooring from the GNBC Office Area,

excavation and staging of contaminated material from the GNBC Office Area and Area 5, backfilling of excavated areas with clean fill, transport and disposal of contaminated material, post-removal restoration of exterior AOCs, and sub-contracting architectural and building services for the restoration of GNBC Office Area.

2.2 RST 3 Scope of Work

The RST 3 SOW for RV1 included conducting gamma surveys, implementation of the Community Air Monitoring Program, post-excavation soil sampling, maintaining the Site-Specific Scribe database, documenting all Site activities in the Site log book and with digital photographs, documenting sampling locations with global positioning system (GPS) technology, and providing oversight of ERRS contractor's activities.

3.0 SUMMARY OF RV1 ACTIVITIES

As part of pre-mobilization activities, Site security, engineering controls, health and safety, community air monitoring, as well as other important considerations, were diligently planned to assure the successful implementation of RV1 at the Site. In addition, proper record keeping and documentation procedures were followed to ensure that the SOW for RV1 was approached and executed in a prudent, cost effective manner.

3.1 Site Planning and Mobilizations

Initial planning for the implementation of RV1 involved preparation and approval of Site plans, structural evaluation of the GNBC building, subsurface public and private utility clearance, clean fill sampling, and Site topographic and boundary survey. These tasks were completed at the outset of RV1 to ensure that due diligence was accomplished by the removal team.

3.1.1 Site-Specific Documents

Prior to mobilization, RST 3 prepared Site-Specific plans for the RV1 activities. These documents included: a Health and Safety Plan (HASP) which defined the safety protocols for RST 3 personnel; a Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) which specified the Standard Operating procedures (SOPs) for sampling activities during the removal operations; and a Community Air Monitoring Plan (CAMP) which outlined the procedures and protocols for the monitoring for and reduction of airborne particulates resulting from removal activities. ERRS also provide their own HASP to address tasks under their SOW. Refer to Appendix B: Site Plans.

3.1.2 Structural Evaluation

At the request of EPA, a structural evaluation of the GNBC building was conducted by a Weston structural engineer on April 27, 2016. The purpose of the evaluation was to determine the structural integrity of the building, what issues may be encountered with the removal of the concrete floor at specific locations, and what engineering controls would be needed during the removal activities. Three specific areas in the building were evaluated: Office Area (RV1), ST-4 Area, and WH-3 Area. Refer to Appendix A1: Structural Evaluation Report, May 5, 2016.

3.1.3 Subsurface Utility Clearance

The identification and marking of subsurface utilities, both public and private infrastructure, was conducted prior to initiation of RV1. ERRS contacted Dig Safely New York and requested a mark out of all public subsurface utilities located within the right-of-way (ROW) areas in proximity to the Site, and on-Site. In addition, ERRS sub-contracted utility locating services to locate and identify subsurface utilities located within the Site boundaries. The sub-contracted services included a magnetometer survey and a Ground Penetrating Radar (GPR) scan of the Site. Infrastructure identified included electric, gas, communication, water, and drainage and sewer lines.

3.1.4 Clean Fill Sampling

Two-inch crusher run limestone gravel was selected as the excavation backfill media due to its availability and its density once compacted. Through a competitive bid process by ERRS, the New Enterprise Stone and Lime Co. Inc, located at 8615 Wehrle Drive, Williamsville, New York, was selected as the fill material vendor. Though the material was mined directly from the limestone bedrock, the material was tested by RST 3 to ensure that it met the backfill acceptance criteria based on NYSDEC *Division of Environmental Remediation (DER)-10, Technical Guidance for Site Investigation and Remediation* (May 3, 2010).

3.2 Site Security and Engineering Controls

During working hours, Site access control was maintained by ERRS. Only authorized personnel with appropriate health and safety training and personal protective equipment (PPE) were allowed within the Site work zones. All external work zones were delineated with chain-link fencing and appropriate signage, and high visibility fencing were utilized were necessary. Access to work zone within the GNBC building was also restricted to authorized Site personnel. Doorways to the work zone within the building and internal wall penetrations (i.e., HVAC system and utility runs) were sealed to prevent migrating of fugitive dust to non-work zone areas. In addition, an exhaust system with HEPA filtration was constructed to vent the work zone in the GNBC building.

Wetting operation was the primary engineering control selected for dust suppression during Site removal activities. Dust suppression was implemented as necessary to prevent the generation of dust during the demolition of building structures, breaking of concrete floor slabs, soil excavation and soil handling operations. In addition, wetting operation was conducted to wet the surfaces of all contaminated soil stockpiles, loading areas, access roads, and areas being excavated.

3.3 Health, Safety, and Community Air Monitoring

The Site-Specific HASP developed for RV1 was consistent with the stipulations set forth by the U.S. Occupational Safety and Health Administration (OSHA) in 29 Code of Federal Regulations (CFR) 1910.120 (Hazardous Waste Operations and Emergency Response). As part of the Site Health and Safety Program, daily health and safety meetings were conducted to discuss the operational tasks for that day and any known or potential hazards associated with the proposed operations. Dust and site control measures were also discussed during the daily meetings to assure operations would be protective to Site workers and the surrounding public.

EPA implemented the established Site-Specific CAMP which was developed for the work completed under RV1. The Site-Specific CAMP provided measures for the protection of on-Site workers and the surrounding public community from potential airborne contaminant releases. Prior to initiating RV1 activities at the Site, RST 3 performed baseline perimeter monitoring for PM_{10} (particulate matter smaller than 10 microns) and community air sampling. PM_{10} monitoring was conducted using five DustTrak particulate monitors (Serial Nos. 8530133221, 8530104111, 8530c101704, 8530091703, and 8530133001) and air sampling was conducted using five RADēCO volumetric air samplers (Serial Nos. 1124, 1113, 3105, 1116, and 1114) with filter media attachment. The baseline perimeter air monitoring and sampling data was utilized by EPA to determine the air quality at the Site under normal conditions. Thereafter, PM_{10} monitoring, and air sampling were conducted daily at upwind and downwind locations based on the daily weather conditions during Site intrusive activities, including the excavation of soil and the loading and transportation of contaminated soil for off-site disposal. However, perimeter air monitoring and sampling was not conducted during periods of precipitation (i.e., rain or snow).

RST 3 implemented the general requirements of the established Site radiation monitoring protocols, which included screening of Site personnel prior to doffing PPE to exit exclusion zones, screening of AOCs during and after excavation is completed in order to determine if all the contaminated soil have been removed, and screening of trucks loaded with contaminated soil to ensure that the level of radiation in the soil truckloads were in compliance with 49 CFR 173.441 (b) and did not exceed the Waste Acceptance Criteria (WAC) of the receiving disposal facility before off-site transportation for disposal.

All work in the exterior exclusion zone was performed in modified Level D PPE (including the use of Tyvek coveralls for the protection of personal clothing). All Site workers were required to wear a personal dosimeter to track radiation exposure while on-Site. Adherence to the radiation safety principles — as low as reasonably achievable (ALARA) and time, distance, and shielding was encouraged at the Site to ensure minimal exposure to radiation. In the interior AOCs within the GNBC building, hearing protection was required during intrusive activities that created excessive noise, and respiratory protection was donned during concrete removal due to concern for potential exposure to particulates that may contain site-related contaminants. Due to frequent vehicular traffic at the Site, high visibility clothing was required for all Site workers. Refer to Appendix B1: Site-Specific Health and Safety Plan and Appendix B3: Site-Specific Community Air Monitoring Plan.

3.4 Chronology of Removal Activities

RV1 activities were conducted from May 26, 2016 through August 13, 2017. Throughout removal operations at the Site, RST 3 and ERRS documented and maintained records of all Site activities, including: Site safety; field screening; monitoring and sampling activities; equipment rentals and procurement; and waste removal, management, and disposal. This information was submitted to the EPA OSC for use in Site management and to prepare Pollution Reports (POLREPs) which provided periodic updates and details of removal activities at the Site. Refer to Attachment D: Photographic Documentation Log and Attachment E: EPA POLREPs with detailed chronology of events at the Site.

May 26, 2016 through June 11, 2016: EPA OSC and HP, ERRS, and RST 3 mobilized to the Site to initiate RV1 activities. The Site-Specific HASPs prepared by RST 3 and ERRS were reviewed by all personnel on-Site in order to identify and emphasize potential hazards at the Site. In addition, the EPA OSC and HP discussed Site logistics to ensure that all personnel understood the objective of RV1. EPA and ERRS identified and established work zones for Site safety, including the various exclusion zones based on the pre-determined AOCs. Locations of contamination reduction zones (CRZ) and support zones that will be associated with each AOC when removal activities are initiated were proposed. The EPA HP established instrumentation and procedural quality control (QC). RST 3 performed baseline perimeter monitoring for PM_{10} and community air sampling to determine the air quality at the Site under normal conditions. ERRS completed the construction of a storage room in the GNBC building for the relocation of operator business literature and showroom display samples in order to prepare for concrete floor and slag layer removal from the AOCs within the GNBC building. ERRS initiated clearing and grubbing of vegetation at the selected work zones and staging areas. Air monitoring and sampling was conducted during clearing and grubbing activities. ERRS identified and made arrangements with vendors for the delivery of various materials, including rentals and procurements. RST 3 completed gamma survey of the cleared wooded areas, as well as the entire parking lot areas of the Site. Following the completion of exterior gamma survey, locations for temporary office modulars (converted CONEX boxes) and the Site command post were established at the south eastern portion of the parking lot where gamma readings were at background levels. ERRS mobilized heavy equipment, supplies, office modulars, CONEX boxes, and roll-off containers to the Site. In preparation for interior utility survey and mark out, materials belonging to the property owner, which were stored in Warehouse 3, were relocated to a CONEX box. On June 14, 2016, RST 3 collected concrete samples for laboratory analysis from locations in GNBC Office Area.

June 24, 2016 through July 13, 2016: EPA OSC and HP, ERRS, and RST 3 mobilized back to the Site. ERRS completed construction of the decontamination (decon) tent outside of GNBC Office Area and constructed an exhaust system and chimney in GNBC Office Area. The GNBC Office Area concrete floor was cut, removed from area, and scanned for radioactivity using Ludlum-2241 and 3x3 NaI scintillator. Wipe samples were collected prior to relocating cut concrete into CONEX box. Radiological contamination was not detected in the concrete wipe samples following on-Site analysis with the Ludlum Model 3030 (Ludlum-3030) Alpha-Beta. The removal of the asphalt/slag layer from GNBC Office Area was initiated and excavated material was placed in cubic yard boxes (CYBs) which were sealed prior to leaving the interior space. Prior to relocating the CYBs to CONEX boxes, wipe samples were collected from the surfaces of the CYBs while in the decon tent and analyzed on-Site using Ludlum-3030. Radiological contamination was not detected in the CYB surface wipe samples. RST 3 collected samples for laboratory analysis, including concrete samples from GNBC ST-3 and GNBC Woodwork Area (WA), and clean fill samples from New Enterprise Stone & Lime Co. Inc. Throughout interior removal operations, RST 3 continued particulate monitoring and air sampling in the GNBC Office Area, as well as locations within other areas of the GNBC building, and exterior of the building. RST 3 utilized an AreaRAE to monitor interior air quality for volatile organic compounds (VOCs), hydrogen sulfide (H_2S), carbon monoxide (CO_2), Oxygen (O_2), and lower explosive limit (LEL) within the interior workspace of the GNBC Office Area throughout removal operations. As per the Site-Specific safety protocol established for exiting exclusion zones, which was adhered to throughout RV1 operations, all Site personnel working in the GNBC Office Area donned

appropriate PPE, including Tyvek, and were scanned using Ludlum Model 3 (Ludlum-3) with pancake probe Model 44-9 (Serial No. PR270126) within the decon tent prior to doffing PPE and exiting the exclusion zone. The Site exclusion zone safety protocol was followed in order to determine if any contamination was removable from PPE prior to doffing, and to prevent being tracked out of the building. On July 13, 2016, a total of seven CYBs of contaminated material had been removed from the GNBC front office and secured in CONEX boxes.

August 1, 2016 through August 22, 2016: EPA OSC and HP, ERRS, and RST 3 mobilized to the Site. All business materials/showroom display samples were relocated to the newly completed storage room in the GNBC building. ERRS completed deconstruction of the GNBC Front Office and removal of the concrete flooring. ERRS continued the excavation of the contaminated layer of asphalt/slag in the GNBC building. All excavated asphalt/slag layer were placed in CYBs and sealed within the Office Area. Prior to transportation from the decon area to a CONEX box, wipe samples were collected from the surfaces of the CYBs and analyzed on-Site using Ludlum-3030. Radiological contamination was not detected in the CYB surface wipe samples. Throughout interior removal operations in the GNBC building, exclusion zone safety protocols were observed. RST 3continued particulate monitoring and air sampling in the GNBC Office Area and additional interior and exterior locations of the GNBC building. Additionally, RST 3 collected three post-excavation soil samples from the GNBC Front Office for laboratory analysis. During this period, approximately 100 CYBs of contaminated material had been removed from the GNBC Front Office and secured in CONEX boxes. ERRS began preparations for the excavation of Area 5. On August 8, 2016, representatives of the Niagara County Health Department (NCHD) visited the Site to discuss project status with the EPA OSC.

August 23, 2016 through September 27, 2016: ERRS continued excavation of the asphalt/slag layer in the GNBC building. Prior to transportation from the decon area to a CONEX box, wipe samples were collected from surfaces of the CYBs and analyzed on-Site with Ludlum-3030. Radiological contamination was not detected in the CYB surface wipe samples. Throughout interior removal operations within the GNBC building, RST 3 continued particulate monitoring and air sampling in the GNBC Office Area and exterior locations, and exclusion zone safety protocols were observed by all Site personnel. ERRS continued preparations for the excavation in Area 5, including removal of trees/vegetation. On August 25, 2016, RST 3 completed the background gamma survey of soil at the northern JCW property. ERT mobilized the High-Pressure Germanium (HPGe) radiation detector to the Site, which was staged in the instrument trailer along with its accessories. In addition to screening excavations with the Ludlum-2241 and 3x3 NaI scintillator setup, the on-Site use of the HPGe for post-excavation soil sample analysis facilitated decision making by EPA in regard to continuing the excavation of an AOC, or to backfill based on post-excavation HPGe soil analytical results. Based on excavation screening and on-Site post-excavation soil analytical results, hot spots were identified in GNBC Office Area and EPA determined that further excavation of material would be needed. A gridded gamma survey was completed in ST-5 of the GNBC building. Utility mark out and concrete floor coring was completed in the Church Property utility building in preparation for subsurface soil sampling for laboratory analysis. Core drilling was performed in the Church Property utility building and GNBC ST-5. RST 3 collected samples for HPGe and laboratory analysis, including soil samples from GNBC Office Area, the Church Property utility building and GNBC ST-5, and concrete samples from the Church Property utility building. On September 14, 2016, tree/vegetation removal was

initiated in Areas 1 and 4. ERRS began grinding tree stumps in Areas 1, 4, and 5. On September 20, 2016, ERRS excavated soil from the hot spots identified in GNBC Office Area. As per guidance from the EPA HP, sample locations were selected on September 22 and 23, 2016, from which RST 3 collected post-excavation soil samples. The soil samples were analyzed using the HPGe radiation detector prior to being submitted for laboratory analysis. During this period, approximately 115 CYBs of contaminated material had been removed from the GNBC Front Office and secured in a CONEX box.

September 28, 2016 through October 22, 2016: ERRS completed all tree removal and stump grinding activities and began excavation of Area 5. Excavated material was separated by concentration. The higher concentration material was placed in CYBs and stored in CONEX boxes. Soil samples were analyzed on-Site using the HPGe radiation detector in order to determine soil concentrations for operational planning. Based on HPGe analytical results, EPA selected soil samples to be submitted for off-site laboratory analysis. Exclusion zone safety protocols were observed and RST 3 continued particulate monitoring and air sampling around the perimeter of Area 5. On September 27, 2016, approximately 116 CYBs of contaminated material had been removed from the GNBC Front Office and 107 CYBs of contaminated material had been removed from Area 5. All the CYBs of contaminated material were secured in CONEX boxes. RST 3 collected post-excavation soil samples for HPGe and laboratory analysis from the ramp in the GNBC Office Area, Area 1, 5, and Area 7.

October 23, 2016 through December 16, 2016: Analytical results of the soil samples collected from the Church Property utility building were received on October 27, 2016 and determined to be background levels. Gamma survey readings at the Church Property parking lot, areas surrounding the Church Property utility building, and inside the utility building were at background levels. On November 4, 2016, representatives of NYSDEC and US Ecology (disposal facility) visited the Site and held meetings with the EPA OSC, two EPA HPs present on-Site, ERRS, and RST 3 to discuss disposal strategy and WAC of the designated waste disposal facilities. On November 30, 2016, RST 3 received and shared with EPA the pre-excavation soil analytical results for Areas 1, 5 & 7. On December 12, 2016, ERRS completed excavation of Area 5. Excavated material was separated by concentration. RST 3 received and shared with EPA the Toxicity Characteristic Leaching Procedure (TCLP) analytical results for the soil samples collected at the GNBC Office Area and Area 5. All TCLP analytical results were below the EPA Maximum Concentration of Contaminants (MCC) for toxicity characteristic as determined by TCLP. A total of 30 trucks delivered approximately 1,060.20 tons of clean fill, which was staged on-Site in Area 5. On December 14, 2016, a total of 34 trucks delivered approximately 1,243.37 tons of clean fill, which was staged on-Site in Area 5. On December 15, 2016, three trucks transported contaminated material from GNBC Office Area to US Ecology in Belleville, Michigan. RST 3 collected soil samples from Area 5 for HPGe and laboratory analysis, including waste disposal/characterization soil samples, post-excavation soil samples, and confirmation soil samples. Based on gamma survey for on-Site waste characterization, the excavated material in Area 5 was broken up into three separate stockpiles: high concentration stockpile (HCP), medium concentration stockpile (MCP), and low concentration stockpile (LCP). Utilizing data from pre-excavation gamma surveys and pre-excavation soil analytical results, the high concentration material was identified. The MCP and LCP stockpiles were sampled and analyzed on-Site with the HPGe radiation detector; however, the samples collected from the LCP stockpile were

submitted for off-site laboratory analysis. On December 16, 2016, a total of approximately 2,487 cubic yards (3,730.80 tons) of contaminated material had been removed from the GNBC Front Office and Area 5. All material were secured awaiting disposal. Approximately, 58.5 tons of material from GNBC Office Area had been shipped off-Site to US Ecology.

December 17, 2016 through January 28, 2017: ERRS and RST 3 continued to coordinate loading and off-Site transportation of excavated, contaminated waste material to US Ecology. EPA, ERRS, and RST 3 utilized a soil blending method proposed by the EPA HP as waste management strategy in order to meet US Ecology WAC. All excavated material from the GNBC Office Area were transported off-site. On January 25, 2017, all excavated material from Area 5 that was temporarily relocated to a secure non-containerized staging area on-Site were transported to US Ecology. The remaining 173 tons of excavated material from Area 5 was stored on-Site in CYBs, labeled, weighed, and secured in CONEX boxes for future disposal. On January 10, 2017, the soil blending waste management strategy proposed by the EPA HP was approved by US Ecology. The City of Niagara Falls approved the blueprint plans for the GNBC Office Area construction. The trees that were removed from Area 5 during the excavation were labeled and staged for future gamma scan and sampling prior to being removed off-site. RST 3 continued using the HPGe radiation detector for soil sample analysis to facilitate determination of soil concentrations for operational planning. ERRS completed backfilling Area 5. On January 28, 2017, approximately 107 tons of contaminated material had been removed from the GNBC Front Office Area and approximately 4,442 tons of material had been excavated from Area 5. All of the excavated material from the GNBC Office Area were shipped off-site to US Ecology. Approximately, 3,707 tons of contaminated material from Area 5 was shipped off-site to US Ecology.

January 29, 2017 through March 23, 2017: The subcontractor that was awarded the contract to restore the GNBC Office Area started work on February 3, 2017. Approximately 100 trees that were previously removed from Area 5 during excavation were returned to the location and assessed for off-Site disposal. Prior to relocating the tree trunks, RST 3 utilized a Ludlum-3 with pancake probe to perform radiological screening/survey and characterized background areas at two zones within Area 5 in order to provide EPA with qualitative gamma screening/survey data which was used to establish Site Specific Screening Levels for determining if the trees were contaminated with elevated levels of radiation. The staging area within Area 5 was divided into two zones. The first zone (Zone 1) located on the west side of Area 5, measuring 60 feet by 7 feet, was used to conduct gamma survey of trees selected for sampling. The second zone (Zone 2) located on the north side of Area 5, measuring 60 feet by 30 feet, was used to stage the remaining trees after they were surveyed for gamma radiation. A total of 15 trees were selected for quantitative analysis utilizing the on-Site HPGe radiation detector. A biased approach was used to determine which trees to sample based on previous analytical soil/slag data in Area 5. The trees in the higher concentration locations were selected. The wood chips obtained from the tree removal were also analyzed via the HPGe radiation detector. The results of gamma scan from each individual tree, as well as the pile of trees, did not exceed the Site-Specific Screening Level of 40 cpm established for Zone 1 and 47 cpm established for Zone 2. Based on both qualitative screening results from the Ludlum-3 with pancake probe and quantitative analytical results from the HPGe radiation detector, no radioactive material from Area 5 was taken up by the trees via the root system, absorbed into the trees, or adhered to the exterior of the trees. On March 23, 2017, the construction

subcontractor rebuilding the GNBC Office Area had completed concrete cuts, plumbing, carpentry, electrical, heating, ventilation, and air conditioning (HVAC), tiling, carpet installation and painting. Refer to Appendix A4: Final Area 5 Tree Removal Gamma Survey and Sampling Trip Report, March 8, 2017.

March 24, 2017 through April 28, 2017: Another EPA OSC was assigned the responsibility to complete the Removal Action at the Site. A site walkthrough was completed by the newly assigned OSC, who also worked with ERRS to ensure minor construction tasks were completed in the GNBC building. A local farmer who opted to utilize the trees that were relocated in Area 5 began removing some of the trees. The previous OSC remained on-Site to transition the Site to the newly assigned OSC.

April 29, 2017 through June 08, 2017: The majority of the Area 5 trees were still on-Site awaiting removal by the local farmer who opted to utilize them. On May 8 through 12, 2017, RST 3 completed additional Removal Assessment sampling activities in Area 1 through Area 7. A total of 20 test pits were advanced to depths 4-feet bgs at locations throughout the Site and a total of 88 soil samples were collected for laboratory radiochemistry analysis. Analytical results indicated concentrations of Ra-226 exceeded the EPA Site-Specific Action Level of 2.48 pCi/g in 32 of the soil samples. Refer to Appendix A5 for the Removal Assessment Sampling Report, January 30, 2019.

June 9, 2017 through July 15, 2017: Based on HPGe field analysis data, EPA selected specific soil/slag samples which were shipped by RST 3 to an off-Site laboratory for analysis. Rainwater was removed from a non-contaminated pit in Area 5, gamma scan was completed in Area 5, and post-excavation soil samples were collected from Area-5 for laboratory analysis. RST 3 continued HPGe analysis of leftover soil/slag samples from the May 2017 Removal Assessment sampling event. The remaining portion of Area 5 was backfilled with clean fill. ERRS completed transport and disposal of the remaining staged material excavated from Area 5. On July 15, 2017, approximately, 762 tons of contaminated material from Area 5 had been shipped off-site to US Ecology, which completed the disposal of all the excavated material that were staged on-Site. In total, approximately 4,574 tons of contaminated material was shipped to US Ecology.

July 12, 2017 through August 13, 2017: RST 3 continued HPGe analysis of 427 bagged leftover soil/slag samples from the May 2017 Removal Assessment test pit soil sampling event. The 427 soil/slag samples were weighed in preparation for disposal and the EPA HP completed blending calculations for disposal of the samples. Leftover slag/soil sample bags/jars were consolidated in CYBs for off-site transportation to US Ecology. The HPGe radiation detector was disassembled for transportation to the EPA Region II office in Edison, New Jersey. The west side of Area 5 was boarded with pressure treated timbers. Fencing for Area 7 was repaired. All the potholes throughout the parking lot were filled in with asphalt cold patch. Specific slag types identified by the EPA HP were shipped by RST 3 for laboratory (radiochemistry and metals) analysis. Electricity in all four on-Site temporary office modulars was disconnected. All CONEX boxes and temporary office modulars were emptied, cleaned, gamma surveyed, and wipe samples were collected and analyzed with Ludlum-3030. Based on wipe analytical results, all CONEX boxes and temporary office modulars were cleared for radiation and removed from the Site. All RBC materials that were stored in CONEX boxes were relocated to GNBC WH-3. Approximately, 2.25

tons of leftover soil/slag sample material from the May 2017 Removal Assessment event was shipped off-site to US Ecology. For the duration of RV1, a total of approximately 4,573.545 tons of contaminated material was shipped to US Ecology.

4.0 AIR MONITORING AND SAMPLING METHODOLOGY

Air Monitoring: Air monitoring activities were conducted in accordance with the procedures outlined within the EPA guidance document titled, "*Superfund Program Representative Sampling Guidance, Volume 2: Air (Short-Term Monitoring), Interim Final. 1995. EPA 540/R-95/140. (OSWER Directive 9360.4-09, PB 96-963206)*." Appropriate activities as outlined within this document include the monitoring necessary to ensure appropriate health and safety levels for the protection of on-Site personnel and ensure that the surrounding community is not exposed to site-related constituents at concentrations above the Site-Specific Action Levels.

DustTrak II (Model 8530) particulate monitors equipped with PM_{10} detectors were used to monitor dust levels throughout the duration of the removal operations. The monitors were operated each workday and measured PM_{10} concentrations in real time. The monitors are calibrated by the equipment manufacturer prior to being used at the Site. When the monitors are turned on daily, the instrument is self-calibrating. Once turned on, the monitors record dust concentrations on a 15-minute time-weighted average (TWA). Meteorological data consisting of wind speed, wind direction, temperature, and barometric pressure were recorded each day to position the monitoring equipment in appropriate upwind and downwind locations. All air monitoring data with time, current activity and the locations of monitoring equipment were recorded in the Site logbook and was available for on-Site review. Meteorological data was obtained from Weather Underground (https://www.wunderground.com/) and recorded daily in the Site logbook.

Air monitoring consisted of continuous real-time air quality monitoring and data collection. Monitoring locations were at areas upwind, at areas of intrusive site activity, and downwind. The monitoring stations were linked via the Netronics system (a wireless network-based communications system), which provided instantaneous real-time air quality readings through a computer server. The air monitoring data generated was utilized to verify if dust suppression activities were effective at maintaining dust levels below the Site-Specific Action Levels. Air monitoring data from each monitoring station was automatically stored real-time on the Netronics computer server.

Air Sampling: In addition to real-time dust monitoring, air sampling was conducted daily at each air monitoring station. RADēCO (Model H-810) volumetric air samplers calibrated by the manufacturer and equipped with replaceable filter media was used to collect ambient air samples. At each air monitoring location, a RADēCO unit was co-located with a DustTrak unit. Each air sampler contained a 2-inch filter holder with a RADēCO (0750-37) glass fiber air filter. The air samplers were set to collect air filter samples at a flow rate of 5 cubic feet per minute (cfm) for a target volume of 2,400 cubic feet (cf) over an approximately 8-hour period. Each day, RST 3 calibrated the air samplers using the RADēCO Air Calibrator (Model D-828) prior to deploying them. Calibration readings were recorded using the RADēCO (Model H-810) Calibration Functional Check Form F001. Calibration forms were reviewed and maintained on-Site by the EPA HP prior to air sampler being used in the field.

Air filter samples were collected at a minimum every four hours during intrusive site operations (*i.e.,* one collected before lunch and another collected after lunch for each air sampler). All air filter samples collected were placed in a glassine envelop before being placed in a re-sealable plastic bag. Air sampling information, including date, start and stop time, start and ending flow rates, and total volume were entered into the Site-Specific Scribe database by RST 3. All information collected from each air sampler were documented by RST 3 using Sample Control Form and Chain of Custody Form F002. Documentation associated with the sample, including Forms F001 and F002, were kept with the sample until.

Upon collection of the air filter samples, RST analyzed the samples on-Site using Ludlum-3030 Alpha Beta counter. Daily air sampling results were recorded using the Personnel Air Monitoring and Exposure Estimate Form F003. Analytical results of air samples were used to verify the effectiveness of dust suppression measures and to ensure Site personnel and nearby residences are not being exposed to site-related airborne contaminants. Refer to Appendix B3: Site-Specific Community Air Monitoring Plan.

4.1 Air Monitoring Objectives

Based on the SOW for RV1, the airborne contaminant of concern was PM_{10} that may potentially contain site-related constituents. Therefore, to assure the health and safety of both Site personnel and the public would not be compromised during removal activities and operations, a Site-Specific Action Level for PM_{10} was established at 0.150 milligrams per cubic meter (mg/m^3) (150 micrograms per cubic meter [$\mu g/m^3$]), following EPA's National Ambient Air Quality Standards (NAAQS) for PM_{10}. The Site-Specific Action Level was adopted and implemented as follows:

Downwind level less than or equal to ($\leq$) 0.10 mg/m^3 (100 $\mu g/m^3$) above the upwind background particulate level:

- Site work activities continued.
- Air monitoring continued.
- Confirmation air sampling initiated for radioactivity analysis to ensure that unhealthy levels of site-related contaminants, if present in particulates, are not exceeded in the ambient air.

Downwind level > 0.10 mg/m^3 above the upwind background particulate level or if visible airborne particulates were observed or recorded on the DustTrak particulate monitors:

- Dust suppression techniques was initiated (i.e., misting with water). Field personnel were notified that early warning alert level has been reached.
- Air monitoring continued.
- Work continued if downwind particulate levels were $\leq$ 0.150 mg/m^3 above the upwind particulate level for not more than a 15-minute average over background level and provided no visible airborne particulates migrated from the work area.
- If, after implementation of dust suppression techniques, downwind particulate levels were >0.150 mg/m^3 above upwind level, work was stopped, and re-evaluation of activities initiated.
- Work resumed provided dust suppression measures and other controls were successful in reducing the downwind particulate concentrations to within 0.150 mg/m^3 of the upwind level and preventing visible dust migration.

4.2 Air Sampling Objectives

Based on the SOW for RV1, in addition to particulate monitoring, confirmation air filter samples for radioactivity analysis were collected to corroborate air monitoring data. Therefore, to assure that unhealthy levels of site-related contaminants, if present in particulates, are not exceeded in the ambient air, a Site-Specific Action Level of 9 disintegrations per minute (dpm) for alpha particles and 400 dpm for beta particles was adopted by EPA as the Site-Specific Risk-Based Action Level, which were implemented as follows:

- Begin air sampling upon initiating intrusive site activities.
- If air filter sample results less than (<) 9 dpm alpha, <400 dpm beta — continue particulate monitoring.
- If air filter sample results >9 dpm alpha, >400 dpm beta — cease activities; investigate cause. Re-evaluate dust suppression measures. Implement appropriate corrective actions. Consider additional engineering control options, including additional off-site air monitoring/sampling. Contact EPA HP to advise if additional respiratory protection and/or potential administrative or engineering. Refer to Appendix B3: Site-Specific Community Air Monitoring Plan.

5.0 SOIL, CONCRETE, AND WIPE SAMPLING METHODOLOGY

All field activities, including sampling activities, were performed in accordance with the RST 3 Site-Specific HASP. All sampling activities were performed in accordance with the RST 3 Site-Specific UFP QAPP and in compliance with EPA's ERT/Scientific, Engineering, Response & Analytical Services (SERAS) contractor's SOP Number (No.) 2001: *General Field Sampling* Guidelines. Refer to Appendix B2: for the Site-Specific UFP Quality Assurance Project Plan.

5.1 Clean Fill Sampling

At the request of the EPA OSC, RST 3 provided support to ERRS for clean fill sampling, which was conducted at the selected off-site fill material vendor facility, New Enterprise Stone & Lime Co. Inc. Clean fill sampling was conducted in accordance with ERT/SERAS SOP No. 2012: *Soil Sampling*. One sample each, of gravel and pea gravel, were collected from each stockpile located in the facility. The samples were collected using dedicated plastic scoops and placed directly into recommended glass sample jars. Fresh nitrile gloves were don between sampling locations. All sample information was entered into the Site-Specific Scribe database from which chain of custody (COC) record and sample labels were printed. The clean fill samples were collected for screening data objective and submitted for laboratory alpha spectroscopy and gamma spectroscopy, analyses.

5.2 Post-Excavation Soil Sampling

Soil sampling was conducted in accordance with ERT/SERAS SOP No. 2012, EPA's MARSSIM, and New York Codes, Rules and Regulations (NYCRR) Part 375 and NYSDEC DER-10. Post-excavation soil samples were collected at a frequency of one sidewall soil sample per 30 linear feet of the excavation perimeter and one bottom soil sample at a frequency of one per 900 sq. ft. Donning fresh nitrile gloves at each sampling location, dedicated plastic scoops were utilized to collect soil samples directly from the excavation side wall or bottom and placed directly into re-sealable plastic bags. The soil samples were homogenized in the plastic bags and then transferred

into laboratory sample containers. Soil samples were analyzed on-Site using the HPGe radiation detector. The soil analytical results generated by the HPGe radiation detector were utilized by EPA to verify that the concentrations of target radionuclides were below the Site-Specific Action Levels prior to backfilling with clean, pre-analyzed soil.

For quality assurance (QA)/QC purposes, field duplicate, and additional sample volumes designated for matrix spike matrix spike duplicates (MS/MSD) analysis, were collected. For QA/QC purposes, field duplicates, and additional sample volumes for MS/MSD analysis, were collected at a rate of one per 20 field samples. All sample information was entered into the Site-Specific Scribe database from which COC records and sample labels were printed. All the soil samples were collected for definitive data objective and submitted to the assigned laboratory for confirmatory alpha and gamma spectroscopy, analyses.

5.3 Waste Disposal Soil Sampling

Prior to the commencement of transportation and disposal of hazardous soil from the Site, it was necessary to satisfy the WAC of the selected disposal facility. At the request of EPA, RST 3 provided sampling support for the collection of soil samples (referred to as disposal soil samples) from the excavated soil piles in GNBC Office Area and Area 5. Waste disposal soil sampling was conducted in accordance with ERT/SERAS SOP No. 2012. At each excavated AOC, fresh nitrile gloves were donned, and aliquots of soil were collected from locations on select soil piles and composited into individual sample. All sample information was entered into the Site-Specific Scribe database from which COC record and sample labels were printed. The waste disposal soil samples were collected for screening data objective and submitted for laboratory analysis, including TCLP VOCs, TCLP semivolatile organic compounds (SVOCs), TCLP pesticides, TCLP herbicides, and TCLP metals including mercury.

5.4 Concrete Sampling

Concrete sampling was conducted in accordance with SOP No. 2011 *Chip, Wipe, and Sweep Sampling* and EPA's *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM) and NYCRR Part 375 (December 14, 2006). Concrete samples were collected from locations selected by the OSC, including demolished concrete foundation slabs and other locations where demolition was not ongoing. At the selected concrete sampling locations, core drilling was performed to extract concrete cores for further laboratory analysis. The drilled cores were returned back to the holes and sealed after sampling. Concrete samples were collected with dedicated nitrile gloves between sample locations. Concrete analytical results were utilized by EPA to determine if concrete material could be repurposed for Site restoration, or if they needed to be disposed of.

For QA/QC purposes, field duplicates, and additional sample volumes for MS/MSD analysis, were collected at a rate of one per 20 field samples. All sample information was entered into the Site-Specific Scribe database from which COC records and sample labels were printed. All the concrete samples were collected for definitive data objective and submitted for confirmatory laboratory alpha spectroscopy and gamma spectroscopy, analyses.

5.5 Wipe Sampling

Wipe sampling was conducted in accordance with SOP No. 2011. Wipe samples were collected from the exterior of CYBs to verify that their exterior surfaces are below the Site Action Levels prior to offsite disposal. Wipe samples were also collected from decontaminated equipment to verify if decontamination procedures effectively removed all contamination below Site-Specific Action Levels. Donning fresh nitrile gloves, each wipe sample was collected within an estimated 100 square centimeters (cm^2) area by wiping the sampling location firmly, vertically, and then horizontally, to ensure complete surface coverage. After collection, each wipe sample was placed in a re-sealable plastic bag and labelled. All sample information was entered into the Site-Specific Scribe database. The wipe samples were analyzed on-Site using Ludlum-3030.

Each wipe sample was analyzed by counting the Minimum Detectable Concentration (MDC) of alpha and beta particles, measured in disintegrations per minute (dpm), over a specified period of time. For the selected counting durations, the Minimum Detectable Activity (MDA) for 100 cm^2 was determined in dpm for alpha and beta counts. The MDA of a counting system as defined by the U.S. Department of Commerce (DOC) National Bureau of Standards (NBS), is that amount of activity which in the same counting time gives a count which is different from the background by three times the standard deviation of the background counting rate. The MDC is the minimum detectable activity measured in concentration units and is often used interchangeably with MDA. Analytical results of the wipe samples were compared with the Site-Specific Action Levels for alpha (9 dpm) and beta (400 dpm) particles.

6.0 GAMMA SURVEY AND SCREENING METHODOLOGY

The exterior radiological survey was conducted in August 2015. The instrumentation setup consisted of Ludlum Model-2241 (Ludlum-2241) gamma meter (Serial No. 198269), 3x3 NaI scintillator (Model 44-20, Serial No. PR330005), Life-line Interoperable Network Communicator (LINC), Trimble® GPS unit, and laptop computer, all synchronized to communicate with EPA's VIPER system (a wireless network-based communications system) via a Gateway (internet source) to provide instantaneous real-time gamma readings through a computer server (Viper Deployment Manager [VDM]). The entire instrumentation setup was placed in an all-terrain vehicle (ATV) for mobility, and the NaI scintillator which was fixed to the rear of the ATV was set to approximately 10 inches above ground surface. As the ATV was driven with the radiological survey instrumentation setup, gamma readings in µR/hr were transmitted through the LINC via the Gateway to EPA's VIPER system. The VIPER system provided instantaneous gamma readings through VDM. The GPS unit provided geographical reference of the gamma readings by transmitting the locational data of the survey instrumentation setup through the Gateway and VIPER to VDM. The instantaneous gamma readings along with the geographical locations were viewed online on the VDM website through the laptop computer screen. With the mobile survey instrumentation setup, RST 3 conducted gamma survey throughout the exterior areas. The gamma survey data was downloaded from VDM and utilized to prepare survey data maps for visual reference. Refer to Attachment A, Figure 3A: Exterior Gamma Survey Map.

During the initial Removal Assessment radiological survey of the interior GNBC building in August 2015, a FLUKE® PIC (FPIC), Model 451P, was utilized to collect static gamma readings

within a 10-foot by 10-foot grid and manually entered into an Excel sheet from which survey data table and map were generated to provide visual reference. In addition, specific locations that indicated elevated gamma reading with the FPIC were verified by using a Ludlum-2241 with 2x2 NaI scintillator and Berkeley Nucleonics Corporation (BNC) SAM 940™ (SAM-940) portable, radioisotope identification system. Refer to Attachment A, Figure 3B: Interior Gamma Survey Map and Appendix A2: Removal Assessment Trip Report, September 9, 2016.

6.1 Excavation Screening

Screening of exterior excavations was conducted using a Ludlum-2241 and 3x3 NaI scintillator. The instrumentation setup was similar to the pre-excavation ATV setup; however, all the instruments were mounted on an infant jogging stroller and screening was completed on foot. The stroller with the instrumentation setup was pushed along predetermined paths within the excavation. In areas of the excavations where the stroller could not be utilized the instrumentation setup was carried by hand and screening was completed on foot while walking along predetermined paths within the excavation.

Screening of interior excavations in the GNBC building was conducted using a Ludlum-2241 and 3x3 NaI scintillator. Static gamma screening data was collected within a 2-foot by 2-foot grid and manually entered into an Excel sheet from which survey data table and map were generated for visual reference.

6.2 Soil and Concrete Sample Screening

Initial screening of soil and concrete samples was performed on-Site using a Ludlum-2241 and 3x3 NaI scintillator. Subsequently, soil and concrete samples were screened on-Site using the HPGe radiation detector which provided quantitative gamma spectrometry analysis. Gamma ray spectrometry is an analytical method that allows the identification and quantification of gamma emitting isotopes in a variety of matrices. In one single measurement with minimal sample preparation, gamma ray spectrometry allows for the detection of several gamma emitting radionuclides in a sample. The measurement gives a spectrum of lines, the amplitude of which is proportional to the activity of the radionuclide and its position on the horizontal axis gives an idea on its energy. After screening each soil sample, a printout of the analytical report, presented in pCi/g, was generated by the HPGe radiation detector.

6.3 Tree Screening

On August 8, 2016 through December 20, 2016, ERRS conducted removal operations of contaminated soil/slag, within Area 5. Before removing the contaminated soil/slag, it was necessary to clear the existing vegetation and approximately 100 trees located within Area 5. Prior to removing the trees, the coordinates (latitude and longitude) of each tree was recorded using GPS technology. Once the trees were removed, a tag number stored in the GPS was assigned to each tree. The branches and canopies of the trees removed from Area 5 were reduced to chips, approximately 2-inches in size, utilizing a portable woodchipper. The remaining trunks of the trees were staged on poly sheeting and fenced off.

On February 2, 2017, RST 3 and ERRS were tasked by EPA to relocate tree trunks which were staged on-Site during the August 2016 removal operations to two predetermined locations within Area 5. Prior to relocating the tree trunks, RST 3 utilized a Ludlum-3 with pancake probe to perform radiological screening and characterized background areas at two zones, Zone 1 and Zone 2, located within Area 5 in order to provide EPA with qualitative gamma screening/survey data which was used to establish Site Specific Screening Levels for determining if the trees were contaminated with elevated levels of radiation. The EPA Site Specific Screening Level of 40 cpm was established for Zone 1 and 47 cpm was established for Zone 2.

In addition, RST 3 collected 10 woodchip samples comprising branches and canopies of the trees removed from Area 5. The woodchip samples were analyzed for quantitative gamma spectrometry utilizing the onsite HPGe radiation detector. Based on both qualitative screening results from the Ludlum-3 with pancake probe and quantitative analytical results from the HPGe radiation detector, no radioactive material from Area 5 was taken up by the trees via the root system, absorbed into the trees, or adhered to the exterior of the trees. Therefore, the trees removed from Area 5 can be transported offsite without any restrictions. Refer to Appendix A4: Final Area 5 Tree Removal Gamma Survey and Sampling Trip Report, March 8, 2017.

6.4 Personnel Screening

Throughout RV1 activities, exclusion zones changed based on the AOC being excavated; therefore, CRZ and support zone locations were also AOC-based. Regardless of the locations of these work zones, the area for personnel screening was always set up at the edge of the CRZ and the support zone. Areas identified for personnel screening were marked to facilitate personnel movement within the zones and for Site personnel to discern.

Prior to leaving the exclusion zone, personnel were required to move to the designated area to be screened. Prior to screening each Site personnel, an individual Personnel Contamination Survey Sheet was filled out to document "Name" of the personnel being screening, "Date/Time" of screening, "Team" the personnel was associated with, "Monitored by" for the person performing the screening, "Instrument Type" was Ludlum-3 with pancake probe, and "SN" for the screening instrument serial number including the Ludlum-3 and the pancake probe.

Using the Ludlum-3 with the pancake probe in "Ratemeter" mode, a reading was collected for each part of the body identified on the Personnel Contamination Survey Sheet. Readings were collected by holding the pancake probe close to the body part being screened without contacting the body part until the reading stabilized. The screening reading was recorded on the Personnel Contamination Survey Sheet and repeated for other part of the body.

If readings were below the 70 cpm standard for the Site, the PPE was doffed and removed from the CRZ for disposal as non-hazardous waste. If readings exceeded 70 cpm for any PPE, that specific PPE was doffed, delineated from other PPE, and a rescreen was performed (i.e., take off outer glove and scan the inner glove). Generally, as contaminated PPE was doffed and delineated from the other PPE, screening readings reduced below 70 cpm. However, if the reading still exceeded 70 cpm, the area of contamination was wiped down with tack cloth. If the contamination persisted, the on-Site EPA HP was consulted, and that PPE was designated for disposal as hazardous waste. Additionally, the contamination was noted in the Personnel Contamination

Event Report. Notably, there were instances at the Site when readings appeared to be elevated because radon had accumulated in the area during personnel screening (i.e., against a tarp that was used wall off the CRZ). This issue was resolved by moving to another location away from the area of radon accumulation and rescreening the personnel. Once personnel screening was completed for that period of the day, the Personnel Contamination Survey sheets were placed in a binder on-Site.

6.5 Waste Disposal Truck Screening

After a disposal truck is loaded with contaminated soil, the truck was guided to the Site exit at an area designated for gamma screening. A Ludlum-2241 and 2x2 NaI Scintillator (Model 44-10) was used to scan the exterior of the truck and trailer beginning from the driver's side, then the back, and finally the passenger side. Every panel or every 2 feet on each side (approximately 15 reading on each side and three readings on the back) was screened. Once the area of each side of the trailer with the highest gamma readings was identified, the FPIC was then used to perform confirmation screening of the truck and trailer. The gamma readings collected with the FPIC were logged onto the Truck Scanning Field Sheets. In accordance with 49 CFR 173.441 (b), EPA adopted the following guidance for disposal truck screening prior to leaving the Site:

- Reading were not to exceed 200 millirems per hour (mrem/hr) when the FPIC is placed directly on the sidewalls and back of the trailer.
- Reading were not to exceed 10 mrem/hr when FPIC is 6 feet away from the sidewalls and back of the trailer.
- Reading were not to exceed 2 mrem/hr in the cabin of the truck.

Following gamma screening and prior to the departure of a disposal truck from the Site, photographs of the front license plate, truck number (if available), trucking company, truck Department of Transportation (DOT) number, and rear license plate were taken. After all the scheduled disposal trucks have been loaded, scanned, and are offsite, the FPIC is utilized to collect up to 10 background measurements within the disposal trucks staging area. An average of the 10 readings is determined and documented on the Truck Scanning Field Sheet and attached to the corresponding waste disposal manifest associated with the truckload. The scan data for all the disposal trucks were well below the guidance gamma readings.

7.0 AIR MONITORING AND SAMPLING RESULTS

Prior to initiating RV1 activities, RST 3 conducted baseline particulate monitoring and air sampling to ascertain the air quality within the Site during normal activities. Baseline particulate monitoring results indicated that PM_{10} concentrations were well below the Site-Specific Action Level of 150 µg/m. Analytical results of baseline air filter samples were well below the Site-Specific Action Level of 9 dpm for alpha particles and 400 dpm for beta particles.

Throughout RV1, RST 3 conducted daily particulate monitoring in accordance with the procedures outlined within the Site-Specific CAMP. A vast majority of the air monitoring data collected daily were well below the Site-Specific Action Level of 150 µg/m. Particulate exceedances were observed during some of the air monitoring events as intermittent spikes on the air monitors. The exceedance spikes were never sustained long enough to indicate an exceedance of the Site-Specific

Action Level based on a 15-minute average using an 8-hour TWA. Throughout RV1 activities, constant monitoring of real-time particulate data from VDM was maintained to detect any particulate concentration spikes in order to initiate corrective action.

The analytical results of the air filter samples collected throughout RV1 activities were used to corroborate the air monitoring data and, subsequently, verify the effectiveness of dust control measures utilized on-Site. Based on analytical results, particle concentrations in air filter samples were generally below the Site-Specific Action Level of nine dpm for alpha particles and 400 dpm for beta particles. Therefore, the dust suppression technique utilized on-Site was effective and protective of Site personnel and the public from potentially contaminated particulates. Refer to Appendix C: DustTrack Air Monitoring Data and Appendix D: RADēCO Air Sampling Data.

8.0 SAMPLE COLLECTION, DISPATCH AND ANALYTICAL RESULTS

8.1 Background Soil Samples and Analytical Results

On August 23, 2016, RST 3 collected a total of 17 soil samples, including one field duplicate, from 16 sampling locations, at depths 0-6 inches bgs, within a predetermined grid at the designated background area, the JCW Property, located north of Area 6. The soil samples were collected for laboratory analysis in order to establish Site background levels for target radionuclides, including actinium-228 (Ac-228), bismuth-212 (Bi-212), cesium-137 (Cs-137), lead-212 (Pb-212), potassium-40 (K-40), protactinium-234 (Pa-234), Ra-226, Ra-228, thallium-208 (Tl-208), thorium-234 (Th-234), uranium-235 (U-235), thorium-228 (Th-228), thorium-230 (Th-230), thorium-232 (Th-232), uranium-233/234 (U-233/234), uranium-235/236 (U-235/236), uranium-238 (U-238).

Prior to soil sample collection, RST 3 placed a radiation shield over each gridded sampling location and utilized Ludlum-2241 and 3x3 NaI scintillator to collect static gamma reading for approximately one minute. The average background reading was 15,279 cpm. It was necessary prior to removal operations, to establish a Site background level which was used to compare post-excavation gamma screening data and determine when removal objectives for excavated AOCs was accomplished in order to backfill the excavations.

On August 25, 2016, all 17 background soil samples, including the one field duplicate, were shipped under COC Record No. 2-082516-140125-0002 via FedEx Airbill No. 7770-7995-5770 to Pace Analytical Services, Inc. (Pace), located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

Validated analytical results of the background soil samples were compared to the Site-Specific Action Levels. Based on validated analytical results, as expected, the concentrations of all target radionuclides were below the Site-Specific Action Levels. Refer to Attachment A, Figure 2A: Exterior Areas of Concern Map, Figure 3A: Exterior Gamma Survey Map, Figure 4: Exterior Background Gamma Scan & Sample Location Map, Attachment B, Table 2: Validated Background (Weber Property) Soil Analytical Results Summary Table, and Appendix F: Data Validation and Laboratory Analytical Reports.

8.2 Concrete Samples and Analytical Results

On June 14, 2016, July 10, 2016, and September 15 through 19, 2016, RST 3 collected a total of 18 concrete samples, including three field duplicates, from locations in GNBC Office Area, contaminated northern portion of GNBC ST-4, GNBC ST-3, GNBC WA, contaminated northern portion of GNBC ST-5, and the Church Property utility building. Concrete background samples were collected from the Church Property at depths 0-6 inches bgs to establish background data for comparing concrete samples collected from exterior AOCs located throughout the Site. Concrete background samples were collected from locations in GNBC ST-3 and GNBC WA at depths 0-4 inches bgs to establish background data for comparing concrete samples collected from interior AOCs. Concrete samples were collected from GNBC Office Area and GNBC ST-4 at depths 0-3 inches bgs and GNBC ST-5 at depths 0-4 inches bgs to determine waste characterization for disposal purposes and verify if the concrete material could be repurposed for site restoration.

On June 15, 2016, RST 3 collected a total seven concrete samples, including one field duplicate, from seven sampling locations in GNBC Office Area and GNBC ST-4 and one rinsate blank for QA purposes. All seven GNBC Office Area and GNBC ST-4 concrete samples, including the one field duplicate, and the one rinsate blank were shipped on June 15, 2016 under COC Record No. 2-061516-100719-0006 via FedEx Airbill No. 7765-2506-5204 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses.

On July 10, 2016, RST 3 collected a total three concrete samples, including one field duplicate, from locations in GNBC ST-3 and GNBC WA. All three GNBC ST-3 and GNBC WA concrete samples, including the one field duplicate, were shipped on July 12, 2016 under COC Record No. 2-071216-140039-0001 via FedEx Airbill No. 7767-2667-1046 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy, analyses.

On September 15, 2016, RST 3 collected a total of two concrete samples from the Church Property utility building. In addition, on September 18 and 19, 2016, RST 3 collected a total of six concrete samples, including one field duplicate, from GNBC ST-5. All eight Church Property and GNBC ST-5 concrete samples, including the one field duplicate, were shipped on September 21, 2016 under COC Record No. 2-092116-095442-0003 via FedEx Airbill No. 7772-9573-1791 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy, analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

Validated analytical results of the concrete samples were compared against the Site-Specific Action Levels for soil. Based on validated analytical results, the concentrations of target radionuclides were below the Site-Specific Action Levels in all the concrete samples collected from GNBC Office Area, GNBC ST-4, GNBC ST-3, GNBC WA, GNBC ST-5, and the Church Property utility building. Refer to Attachment B, Table 3: Validated Concrete Analytical Results Summary Table and Appendix F: Data Validation and Laboratory Analytical Reports.

8.3 Clean Fill Samples and Analytical Results

On July 11 and 12, 2016, RST 3 collected two clean fill samples, including one pea gravel sample and one gravel sample, from New Enterprise Stone & Lime Co. Inc., an off-site fill material

vendor. The samples were collected to verify that the fill material meets the regulatory requirement for use as fill at the Site.

On July 12, 2016, both clean fill samples were shipped under COC Record No. 2-071216-140039-0001 via FedEx Airbill No. 7767-2667-1046 to Pace, located in Greensburg, Pennsylvania for alpha spectroscopy and gamma spectroscopy, analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

Analytical results of the clean fill samples were compared against the Site-Specific Action Levels for soil. Based on analytical results, the concentrations of target radionuclides were well below the Site-Specific Action Levels. Refer to Attachment B, Table 4: Clean Fill Analytical Results Summary Table and Appendix F: Data Validation and Laboratory Analytical Report.

8.4 Waste Disposal Soil Samples and Analytical Results

On December 5, 2016, RST 3 collected a total of seven waste disposal soil samples, including one field duplicate, from six sampling locations in Area 5. On the same day, RST 3 collected two waste disposal soil samples from two sampling locations in GNBC Office Area. The waste disposal soil samples were collected from the AOCs to characterize the soil for waste disposal in order to meet the requirement of the waste disposal facility.

On December 5, 2016, all nine waste disposal soil samples, including the one field duplicate, were shipped under COC Record No. 2-120516-130200-0008 via FedEx Airbill No. 7778-6685-6570 to Chemtech Consulting (Chemtech), located in Mountainside, New Jersey for TCLP VOCs, TCLP SVOCs, TCLP pesticides, TCLP herbicides, and TCLP metals, analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

The analytical results of the waste disposal soil samples were compared with the EPA Maximum Concentration of Contaminants (MCCs) for the toxicity characteristic in accordance with 40 CFR 261.24. Based on analytical results, concentrations of TCLP VOCs, TCLP SVOCs, TCLP pesticides, and TCLP herbicides, were not detected in any waste disposal soil sample. Based on analytical results, at least one or more TCLP metals including, barium, cadmium, chromium, and lead, were detected at concentrations below their respective MCC values in a least one waste disposal soil sample. Refer to Attachment B, Table 5: Waste Disposal Soil Analytical Results Summary Table – TCLP and Appendix F: Data Validation and Laboratory Analytical Reports.

8.5 Pre-Excavation and Excavation Soil Samples and Analytical Results

Prior to initiating excavation activities at the various on-Site AOCs, pre-excavation (before initiating excavation activities) and excavation (during ongoing excavation activities) soil sampling was conducted to further delineate the extent of the contamination in specific AOCs before and/or during excavation activities. Both pre-excavation and excavation soil samples were collected for on-Site analysis using the HPGe radiation detector. At the discretion of the EPA OSC, select pre-excavation and excavation soil samples were submitted for confirmatory laboratory analysis. Analytical results of all the pre-excavation and excavation soil samples, including samples analyzed via the on-Site HPGe radiation detector and off-site laboratory, were compared against the Site-Specific Action Levels for soil.

Soil samples were collected from sampling locations in the Church Property utility building (as background), GNBC ST-5, GNBC Office Area, Areas 1, Area 5, and Area 7. Pre-excavation soil sampling locations in Area 1, Area 5, and Area 7 were selected based on results from prior radiological surveys and excavation soil samples were also collected from Area 5 during excavation. Pre-excavation soil sampling locations in GNBC ST-5 and GNBC Office Area were selected based on results from pre-excavation gamma scans. Based on radiological surveys and/or gamma scans conducted in these AOCs, pre-excavation and excavation soil sampling locations were biased to hot spots where elevated gamma reading were detected. Sample depth was biased to intervals with visible slag; therefore, sample depth intervals were inconsistent and varied at sampling locations. In addition to off-site laboratory analysis, pre-excavation soil samples were analyzed on-Site with the HPGe radiation detector to delineate hot spots and verify the extent of contamination in the various AOCs. Excavation soil samples from Area 5 were analyzed on-Site with the HPGe radiation detector for guidance to verify if all radiological materials have been removed from the AOC or not and determine if further excavation or backfill is required.

On September 15, 2016, RST 3 collected a total of eight background soil samples from the same two sampling locations where concrete samples were collected in the Church Property utility building. The soil samples were collected at varying depth intervals ranging from 5-30 inches bgs. All four samples collected from one of the two sampling location were analyzed on-Site with the HPGe radiation detector; however, all eight samples collected from both sampling locations were submitted for laboratory analysis.

On September 18 and 19, 2016, RST 3 collected a total of 14 pre-excavation soil samples, including two field duplicates, from five sampling locations in GNBC ST-5. The soil samples were collected at varying depth intervals ranging from 4-30 inches bgs. A total of 12 soil samples collected from four of the sampling locations were analyzed on-Site with the HPGe radiation detector. The two soil samples collected from one sampling location were not analyzed with the HPGe radiation detector. All 14 soil samples, including the two field duplicates, were submitted for laboratory analysis.

On August 4 and 16, 2016 and September 9 and 20, 2016, RST 3 collected a total of 13 pre-excavation soil samples from 13 sampling locations in GNBC Office Area at depths 0-4 inches bgs. A total of 12 soil samples were analyzed on-Site with the HPGe radiation detector. All 13 soil samples were submitted for laboratory analysis.

On October 1, 2016, RST 3 collected a total of three pre-excavation soil samples from one sampling location in Area 1 at depths 0-6 and 6-12 inches bgs. All three soil samples were analyzed on-Site with the HPGe radiation detector and submitted for laboratory analysis.

On October 12, 2016, RST 3 collected a total of 45 pre-excavation soil samples, including two field duplicates, from 11 sampling locations in Area 5. The soil samples were collected at varying depth intervals ranging from 0-48 inches bgs. A total of 24 soil samples, including two field duplicates, were selected by the EPA OSC from eight sampling locations for laboratory analysis. The remaining 21 soil samples were analyzed on-Site with the HPGe radiation detector.

On October 24 and 25, 2016, RST 3 collected a total of 36 excavation soil samples, including two field duplicates, from six sampling locations in Area 5. The soil samples were collected at varying

depth intervals ranging from 0-52 inches bgs. All 36 soil samples, including the two field duplicates, were analyzed on-Site with the HPGe radiation detector.

On October 14, 2016, RST 3 collected one pre-excavation soil sample from one sampling location in Area 7 at depths 0-6 inches bgs. The one soil sample was analyzed on-Site with the HPGe radiation detector and submitted for laboratory analysis.

On September 21, 2016, all 35 soil samples, including the two field duplicates, comprising eight background soil samples collected from the Church Property utility building, 14 pre-excavation soil samples, including two field duplicates, collected from GNBC ST-5, and 13 excavation soil samples collected from GNBC Office Area were shipped on September 21, 2016 under COC Record No. 2-092116-095442-0003 via FedEx Airbill No. 7772 9573 1791 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses.

On October 3, 2016, all 27 pre-excavation soil samples, including two field duplicates, comprising the three pre-excavation soil samples collected from Area 1, the 24 pre-excavation soil samples, including two field duplicates, collected from Area 5, and the one pre-excavation soil sample collected from Area 7 were shipped on November 1, 2016 under COC Record No. 2-110116-094247-0007 via FedEx Airbill No. 7776 0701 0848 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

Church Property: Based on analytical results of the soil samples collected as background samples from the Church Property utility building, as expected, the concentrations of target radionuclides were well below the Site-Specific Action Levels, both in laboratory and HPGe analytical results. Refer to Attachment A, Figure 2A: Exterior Areas of Concern Map, Figure 3A: Exterior Gamma Survey Map, Attachment B, Table 6: Background (Church Property) Soil Analytical Results Summary Table, Appendix E: HPGe Analytical Data, and Appendix F Data Validation and Laboratory Analytical Report.

GNBC ST-5: RST 3 completed a full pre-excavation static gamma scan of GNBC ST-5 utilizing Ludlum-2241 and 3x3 NaI scintillator with shielding. The gamma scan data was collected in µR/hr within a 2-foot by 2-foot grid pattern in order to determine hot spots containing radiological material. Based on analytical results of the pre-excavation soil samples collected from GNBC ST-5, concentrations of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g both in laboratory and HPGe analytical results of three soil samples. The concentration of Ra-228 exceeded the Site-Specific Action Level of 15.9 pCi/g in laboratory analytical result of one soil sample. Concentrations of K-40 exceeded the Site-Specific Action Level of 25.9 pCi/g in laboratory analytical results of two soil samples. The analytical results will be utilized by EPA for operational decisions during the next phase of removal activities at the Site. Refer to Attachment A, Figure 2B: Interior Areas of Concern Map, Figure 3B: Interior Gamma Survey Map, Attachment B, Table 7: Storage-5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Report.

GNBC Office Area: Prior to initiating excavation activities, RST 3 completed a full pre-excavation static gamma scan of the GNBC Office Area utilizing Ludlum-2241 and 3x3 NaI scintillator with shielding. The gamma scan data was collected in cpm within a 2-foot x 2-foot grid pattern in order to determine hot spots containing radiological material. Following the removal of the concrete floor within GNBC Office Area, RST 3 collected pre-excavation soil samples at depths 0-4 inches bgs throughout the AOC. Based on analytical results of the pre-excavation soil samples collected from GNBC Office Area, concentrations of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g both in laboratory and HPGe analytical results of two soil samples. The concentration of K-40 exceeded the Site-Specific Action Level of 25.9 pCi/g in laboratory analytical result of one soil sample. Refer to Attachment A, Figure 2B: Interior Areas of Concern Map, Figure 3B: Interior Gamma Survey Map, Attachment B, Table 8A: Office Area Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Report.

Area 1: Based on analytical results of the pre-excavation soil samples collected from Area 1, concentrations of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g both in laboratory and HPGe analytical results of all three soil samples. Concentration of Ra-228 exceeded the Site-Specific Action Level of 15.9 pCi/g in laboratory analytical results of two soil samples. The concentration of K-40 exceeded the Site-Specific Action Level of 25.9 pCi/g in laboratory analytical result of one soil sample. The analytical results will be utilized by EPA for operational decisions during the next phase of removal activities at the Site. Refer to Attachment A, Figure 2A: Exterior Areas of Concern Map, Figure 3A: Exterior Gamma Survey Map, Attachment B, Table 9: Area 1 Pre-Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Report.

Area 5: Based on analytical results of the pre-excavation soil samples collected from Area 5 for laboratory analysis, concentrations of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g in 20 soil samples, both in laboratory and HPGe analytical results of 12 soil samples and HPGe analytical results of eight soil samples. Refer to Attachment A, Figure 2A: Exterior Areas of Concern Map, Figure 3A: Exterior Gamma Survey Map, Attachment B, Table 10A: Area 5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Reports.

Area 7: Based upon results from prior radiological survey, pre-excavation soil sample was collected, and sampling location biased to a hot spot indicting elevated gamma reading. Based on analytical results of the pre-excavation soil sample collected from Area 7, the concentration of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g both in laboratory and HPGe analytical results. The concentration of Ra-228 exceeded the Site-Specific Action Level of 15.9 pCi/g in laboratory analytical results. The analytical results will be utilized by EPA for operational decisions during the next phase of removal activities at the Site. Refer to Attachment A, Figure 2A: Exterior Areas of Concern Map, Figure 3A: Exterior Gamma Survey Map, Attachment B, Table 11: Area 7 Pre-Excavation Soil Analytical Results and Screening Data Summary Table Attachment E: HPGe Analytical Data, and Attachment F: Data Validation and Laboratory Analytical Reports.

8.6 Post-Excavation Confirmation Soil Samples and Analytical Results

GNBC Office Area: After excavating down to native soil within GNBC Office Area, RST 3 performed a full post-excavation static gamma scan of the AOC utilizing Ludlum-2241 and 3x3 NaI scintillator with shielding. The gamma scan data was collected in cpm within the same 2-foot x 2-foot grid pattern utilized for the pre-excavation gamma scan in order to verify that all radiological material was successfully removed. Post-excavation confirmation soil samples were collected for both on-Site HPGe and off-site laboratory analysis. Based on results from the post-excavation gamma scan, five hot spots were identified and excavated further up to 6 inches bgs. The hot spots were scanned again after further excavation, and additional post-excavation confirmation soil samples were collected from the hot spots for both on-Site HPGe and off-site laboratory analysis.

On September 22 and 23, 2016, RST 3 collected a total of 14 post-excavation confirmation soil samples, including one field duplicate, from 13 sampling locations within GNBC Office Area. On October 5, 2016, RST 3 collected two additional post-excavation confirmation soil samples from two sampling location on the ramp associated with the GNBC Office Area. All the soil samples were collected at depths 0-4 inches bgs after removal of the concrete slab. All 16 soil samples, including the one field duplicate, were analyzed on-Site with the HPGe radiation detector. In addition, six post-excavation soil samples comprising three soil samples, including one field duplicate, collected on September 22, 2016 and three soil samples collected on September 23, 2016 were shipped on September 29, 2016 under COC Record No. 2-092616-103546-0004 via FedEx Airbill No. 7773 5014 4406 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. Furthermore, eight post-excavation soil samples comprising three soil samples collected on September 22, 2016 and five soil samples collected on September 23, 2016 were shipped on October 3, 2016 under COC Record No. 2-100316-134303-0006 via FedEx Airbill No. 7773 7645 6176 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. The two post-excavation soil samples collected from the GNBC Office Area ramp on October 5, 2016 were shipped on November 1, 2016 under COC Record No. 2-110116-094247-0007 via FedEx Airbill No. 7776 0701 0848 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. Refer to Attachment B, Table 1: Sample Collection Summary Table and Appendix G: Chains of Custody Record.

Based on analytical results of the post-excavation confirmation soil samples collected from GNBC Office Area, the concentration of Ra-226 exceeded the Site-Specific Action Level of 2.48 pCi/g in HPGe analytical result of one soil sample; however, the concentration of Ra-226 in laboratory analytical result of the same soil sample was below the Site-Specific Action Level. Concentrations of K-40 exceeded the Site-Specific Action Level of 25.9 pCi/g in laboratory analytical results of two soil samples; however, since the Site-Specific Action Level of K-40 was only slightly exceeded in both soil samples, and since laboratory analytical results of both samples did not indicate that concentrations Ra-226, the main contaminant of concern, exceeded the Site-Specific Action Level, no further sampling was performed. The excavation was backfilled. Refer to Attachment A, Figure 5B: Post-Excavation Office Area Gamma Scan Map, Figure 5C: Office Area Post-Excavation Sample Location Map, Attachment B, Table 8B: Office Area Post-Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Reports.

Area 5: After excavating down to native soil within Area 5, RST 3 performed a full post-excavation gamma scan (in µR/hr) of the AOC utilizing the ATV setup which comprised of Ludlum-2241 and 3x3 NaI scintillator as well as VIPER. The post-excavation gamma scan was conducted to verify that all radiological material was successfully removed. Based on results from the post-excavation gamma scan, post-excavation confirmation soil samples were collected throughout Area 5 for both on-Site HPGe and off-site laboratory analysis.

On December 8, 9, and 13, 2016, RST 3 collected a total of 15 post-excavation confirmation soil samples, including one field duplicate, from 14 sample locations in Area 5. All the soil samples were collected at depths 0-6 inches bgs. All 15 soil samples, including the one field duplicate, were analyzed on-Site with the HPGe radiation detector and shipped on December 21, 2016 under COC Record No. 2-122116-101858-0009 via FedEx Airbill No. 7780 1565 7152 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses.

Based on analytical results of the post-excavation confirmation soil samples collected from Area 5, the concentrations of all target radionuclides were below the Site-Specific Action Levels both in laboratory and HPGe analytical results. Since no further action was required, the excavation was backfilled. Refer to Attachment A, Figure 6B: Area 5 Post-Excavation Gamma Scan & Sample Location Map, Attachment B, Table 10B: Area 5 Post-Excavation Soil Analytical Results and Screening Data Summary Table, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Reports.

9.0 POST-EXCAVATION GAMMA SURVEY RESULTS

After the excavation of contaminated soil/slag material from the AOCs on-Site, post-excavation gamma survey or gamma scans were performed prior to backfilling the excavations with clean fill. In order to verify that there were no hot spots remaining that needed to be addressed, the results of post-excavation gamma surveys or scans were compared with the results of pre-excavation gamma surveys and scans conducted in the excavated AOCs as well as the background gamma scan conducted at the JCW Property, located north of Area 6. Based on results of the gamma scan conducted at the JCW Property, average background gamma reading ranged from 13,780 cpm to 16,751 cpm (average of 15,279 cpm).

Based on the results of pre-excavation gamma survey conducted in the GNBC Office Area, gamma readings ranged from 16,500 cpm to 25,000 cpm. When post-excavation gamma scan readings collected from GNBC Office Area were compared with pre-excavation gamma scan readings collected from GNBC Office Area and background gamma scan readings collected from the JCW Property, it was determined that the gamma readings were considerably reduced and generally ranged from background to <2x background. Refer to Attachment A, Figure 3B: Interior Gamma Survey Map, Figure 5A: Pre-Excavation Office Gamma Scan Map, and Figure 5B: Post-Excavation Office Gamma Scan Map.

Based on the results of pre-excavation gamma survey conducted in Area 5, gamma readings ranged from <15 µR/hr to > 150 µR/hr. Site specific background gamma concentrations were determined to range between 10 to 15 µR/hr. When post-excavation gamma survey readings were compared with pre-excavation gamma survey readings collected from Area 5, it was determined that gamma readings were considerably reduced and generally ranged from background to <2x background.

Refer to Attachment A, Figure 3A: Exterior Gamma Survey Map, Figure 6A: Area 5 Pre-Excavation Gamma Scan Map & Sample Location Map, and Figure 6B: Area 5 Post-Excavation Gamma Scan & Sample Location Map.

Pre-excavation gamma survey was conducted in GNBC ST-5; however, this AOC was not addressed during RV1. Based on the results of pre-excavation gamma survey conducted in ST-5, gamma readings ranged from 11 µR/hr to 13 µR/hr at background areas and ranged from 19 µR/hr to 27 µR/hr in the northwest portion where hot spots were identified. It is anticipated that this AOC will be addressed during RV2. Refer to Attachment A, Figure 3B: Interior Gamma Survey Map and Figure 7: ST-5 Pre-Excavation Gamma Scan Map.

10.0 WASTE MANAGEMENT

All material excavated from the GNBC Office Area (including slag, soil, and concrete) were containerized in CYBs and staged in the exclusion zone. Post-containerization wipe samples were collected on the top and sides of the CYBs and analyzed on-Site with Lulum-3030 to determine if the boxes themselves were contaminated during loading. Analytical results of wipe samples from CYB surfaces that did not exceed the Site-Specific criteria were then moved to a CONEX box for secure storage. Throughout removal operations, no wipe samples exceeded Site-Specific criteria. In addition to the wipe samples, composite waste samples were also collected and submitted for laboratory analysis and waste disposal characterization.

All the excavated slag/soil material from Area 5 were staged in hot spot piles within Area 5. Composite samples were collected from the hot spot piles for laboratory analysis and waste disposal characterization. Based on gamma survey for on-Site waste characterization, the excavated material in Area 5 was broken up into three separate stockpiles: HCP, MCP, and LCP.

Waste Material Blending: Due to the WAC established for the disposal facility, a "blending" calculation was devised by the EPA HP to mix the material based on their relative concentration; HCP, MCP, and LCP. A specific quantity of higher concentrated material was mixed with a specific quantity of lower concentrated material resulting in acceptable concentrations meeting the facility's WAC. For this quantification, additional samples were collected and analyzed both on-Site using the HPGe radiation detector, as well as an off-site analytical laboratory.

On December 12, 2016, RST 3 collected a total of 10 waste soil samples at depths 0-6 inches bgs from the LCP stockpile located on-Site. All 10 waste soil samples were shipped on December 21, 2016 under COC Record No. 2-122116-102853-0010 via FedEx Airbill No. 7780 1565 7510 to Pace, located in Greensburg, Pennsylvania for alpha and gamma spectroscopy analyses. Refer to Attachment B, Table 10C: Area 5 LCP Soil Analytical Results and Screening Data Summary Table, Appendix G: Chains of Custody Record, Appendix E: HPGe Analytical Data, and Appendix F: Data Validation and Laboratory Analytical Reports.

11.0 WASTE DISPOSAL

All the waste materials generated on-Site were documented in waste manifests prior to being transported off-site by U.S. Bulk Transport and Page ETC to the designated disposal facility. All waste transport trucks were scanned prior to departing the Site in accordance with 49 CFR 173.441

(b). Approximately 107 tons of contaminated material was excavated from the GNBC Office Area, approximately 4,465 tons of contaminated material was excavated from Area 5, and approximately 2.25 tons of leftover soil/slag sample material from the May 2017 Removal Assessment event were generated on-Site as contaminated waste soil for off-Site disposal. For the duration of RV1, a total of approximately 4,574 tons of contaminated material was shipped off-site by U.S. Bulk Transport and Page ETC to Wayne Disposal, Inc located in Belleville, Michigan. Refer to Attachment B, Table 12: Waste Generation and Disposal Summary Table and Appendix H: Disposal Manifests.

12.0 SITE RESTORATION

The main AOCs that were addressed during RV1 included the GNBC Office Area and Area 5; therefore, the extent of site restoration was focused on these AOCs. Approximately 2,304 tons of certified clean fill was delivered to the Site in 74 trucks and staged in Area 5 for site restoration purposes. After the excavation of GNBC Office Area was completed, clean fill was used to backfill the excavation. Subsequently, a construction subcontractor was awarded the contract to rebuild the GNBC Office Area, which included completing concrete cuts, plumbing, carpentry, electrical, HVAC, tiling, carpet installation and painting. After the excavation of Area 5 was completed, clean fill was used to backfill the excavation.

All CONEX boxes and temporary office modulars were emptied, cleaned, and gamma surveyed, and wipe samples collected and analyzed with Ludlum-3030. Based on wipe sample analytical results, all CONEX boxes and temporary office modulars were cleared for radiation and removed off-site. All RBC materials that were stored in CONEX boxes were relocated to GNBC WH-3. Two CONEX boxes and all four temporary office modulars were removed from the Site.

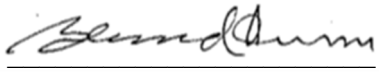
In order to ensure site safety after demobilizing from the Site, the west side of Area 5 was bordered with pressure treated wood, fencing for Area 7 was repaired, grading and asphalt installation around RBC was completed. All the potholes throughout the parking lot were filled in with asphalt. It is anticipated that additional site restoration, including placing asphalt throughout Area 5, will be completed during the next phase of removal activities on-Site.

13.0 CONCLUSION

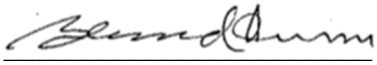
From May 26, 2016 through August 13, 2017, EPA completed RV1 activities at the Site. The planned SOW completed under RV1 included the construction of alternative storage room in the GNBC building for the relocation of GNBC Office Area materials, clearing and grubbing of designated staging areas and Area 5, demolition of the GNBC Office Area office including the removal of non-load bearing walls, removal of concrete flooring from the GNBC Office Area, excavation and staging of contaminated material from the GNBC Office Area and Area 5, backfilling of excavated areas with clean fill, transportation and disposal of contaminated material, post-removal restoration of exterior AOCs, and sub-contracting architectural and building services for the restoration of GNBC Office Area.

Based on the limited SOW completed for the duration of RV1, a significant part of the planned SOW for the overall Removal Action at the Site is yet to be accomplished. Therefore, the

remaining AOCs on-Site (Area 1 through 4 and Area 6 and 7) will be addressed during future mobilization for removal activities at the Site. Due to funding limitation, EPA discontinued removal operation at the Site on July 13, 2017 with a view to continue work in the Spring of 2018.

Report prepared by:  05/24/2021

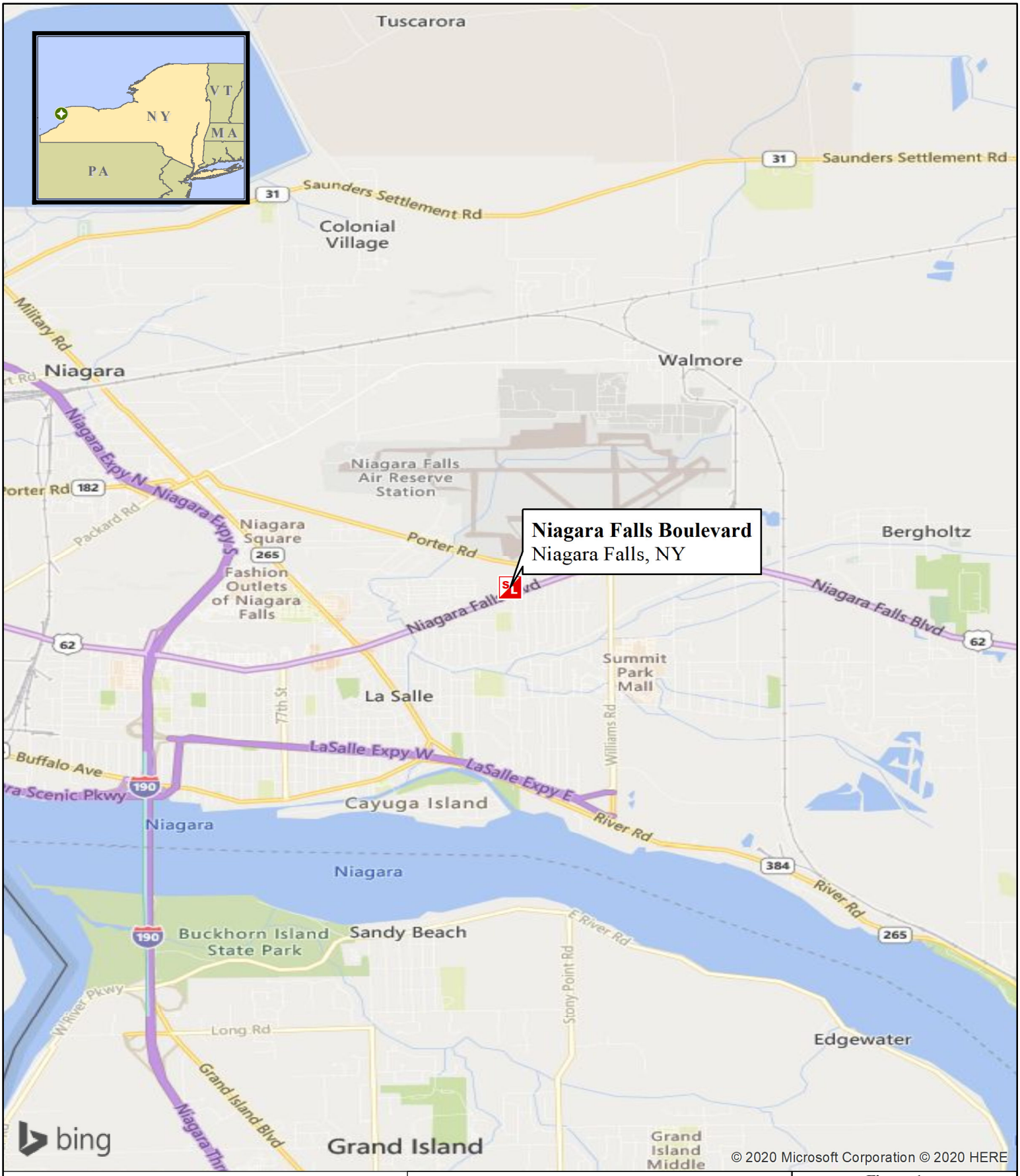
Bernard Nwosu — Date
START V Group Leader

Report reviewed by:  05/24/2021

Bernard Nwosu — Date
START V Group Leader

ATTACHMENT A

Figures



Legend

Site Location

N

0 0.325 0.65 1.3 1.95 2.6 Miles

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 1:
Site Location Map

Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	M. LANG
EPA OSC:	P. LISICHENKO
START V SPM:	S. QUINN
CHARGE #::	40200.021.036.2017

DATE MODIFIED: 10/9/2020

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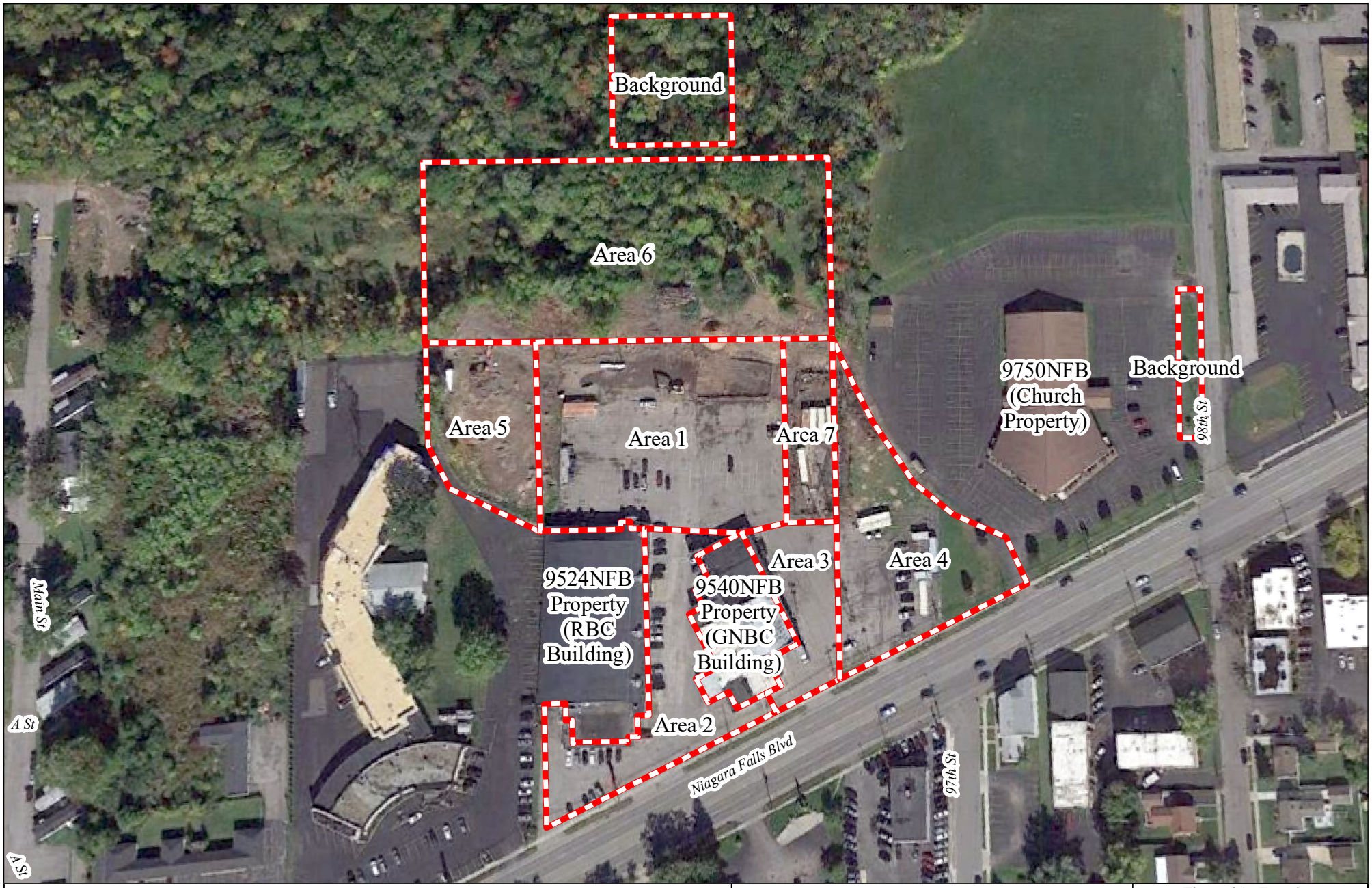

Legend

Area of Concern

Notes:
NFB - Niagara Falls Boulevard
RBC - Rapids Bowling Center
GNBC - Greater Niagara Building Center

N

0 80 160 320 480 640 Feet

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Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 2A: Exterior Area of Concern Map

NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NEW YORK

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	T. BENTON
EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
FILENAME:	200918_ExcavationArea.mxd

DATE MODIFIED: 10/9/2020

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Legend

- Area of Concern
- Background Locations
- Greater Niagara Building Center (GNBC)

N

0 10 20 40 60 80 Feet

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Federal East Division

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Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 2B: Interior Area of Concern Map

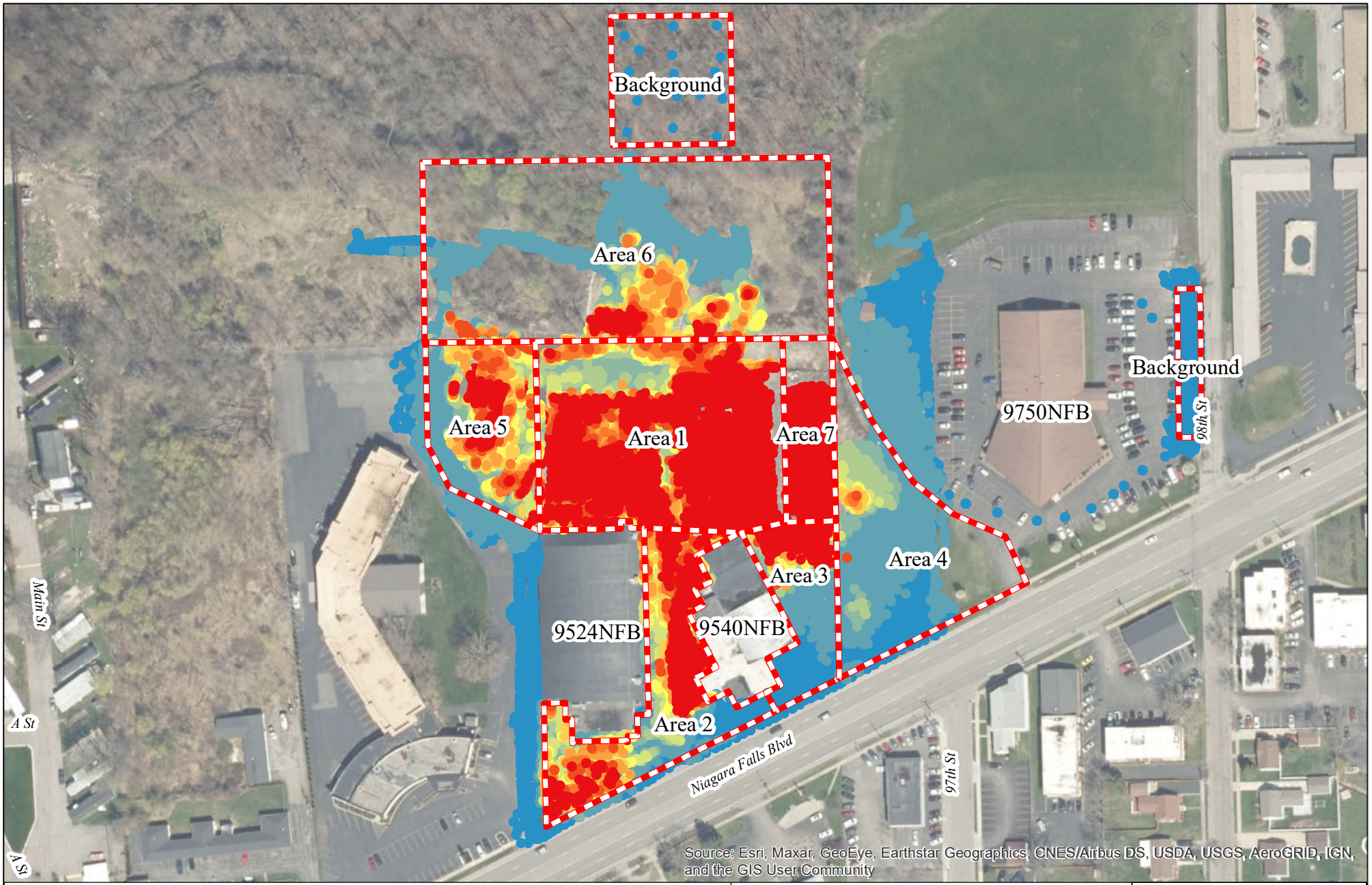
Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	M. LANG
EPA OSC:	P. LISICHENKO
START V SPM:	S. QUINN
CHARGE #::	40200.021.036.2017

DATE MODIFIED: 10/9/2020

\\FSED2DATA1\GISDATA\START_V\00360017\MXD\200918_NFB_AOC.MXD



Legend

Gamma Reading (uR/hr)

- < 15 (1x)
- 15 - 30 (2x)
- 30 - 45 (3x)
- 45 - 60 (4x)
- 60 - 75 (5x)
- 75 - 90 (6x)
- 90 - 105 (7x)
- 105 - 120 (8x)
- 120 - 135 (9x)
- 135 - 150 (10x)
- >150

Area of Concern

Notes:
NFB - Niagara Falls Boulevard
Gamma survey conducted with Ludlum 3x3 Sodium Iodide Detector from June 2 through June 8, 2016.
Gamma survey measurements presenting in micro-Roentgen per hour (µR/hr).
Background reading: 15 µR/hr.

0 80 160 320 480 Feet

N

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Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 3A: Exterior Gamma Survey Map

NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NEW YORK

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT
& RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	K. HEULITT
EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
FILENAME:	200918_NFB_Gamma_OV.mxd

DATE MODIFIED: 10/13/2020

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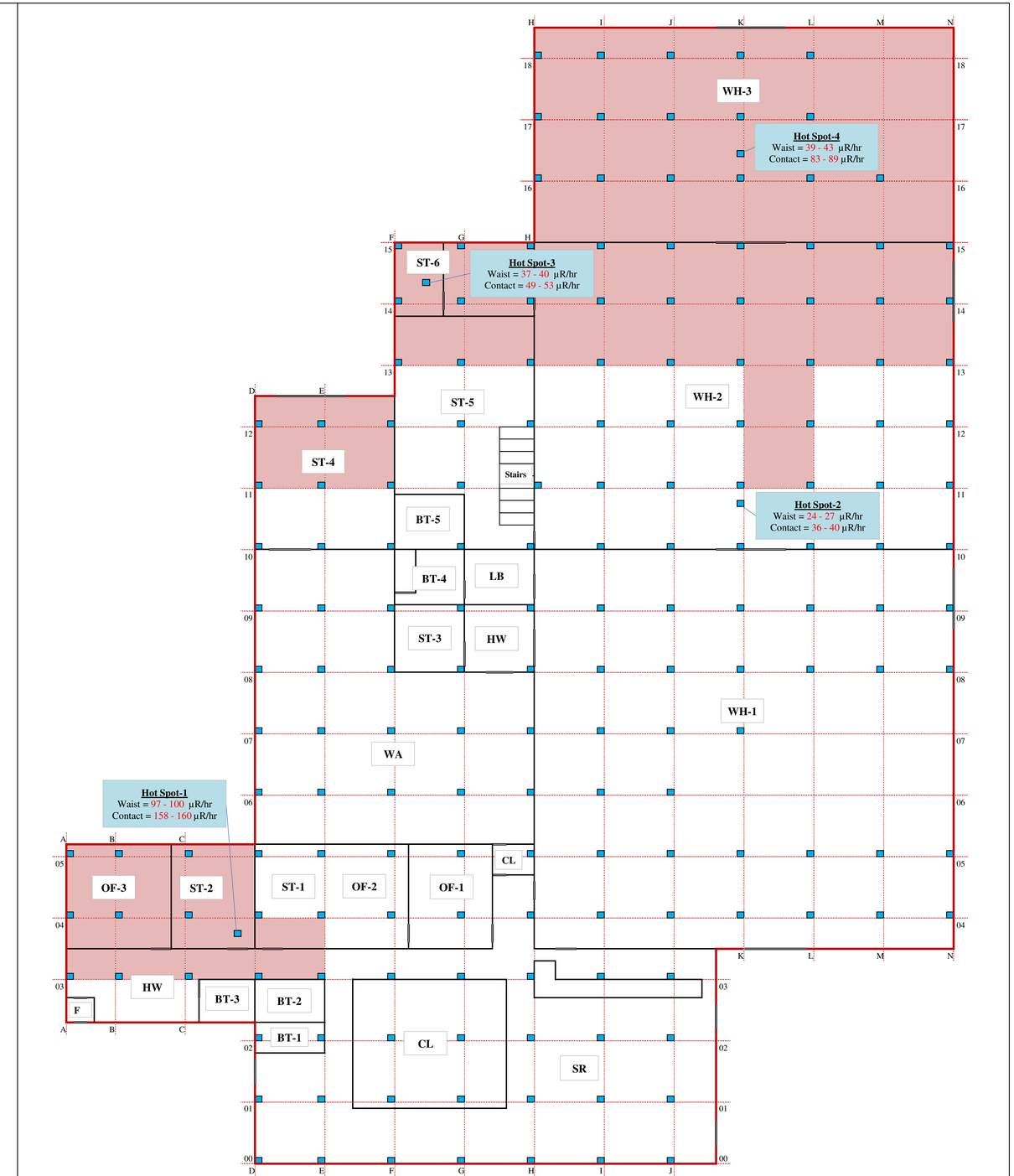
Interior Gamma (FPIC) Survey Data Summary
Niagara Falls Boulevard Site (9540 Niagara Falls Boulevard)

Rows			Transects A	B	C	D	E	F	G	H	I	J	K	L	M	N
										NM	NM	NM	NM	NM	NM	NM
	18	Waist								16 - 19	23 - 27	21 - 24	22 - 25	28 - 30	NA	NA
		Contact								21 - 24	28 - 30	23 - 28	28 - 30	27 - 30	NA	NA
	17	Waist								21 - 24	25 - 28	24 - 27	33 - 37	25 - 28	NA	NA
		Contact								22 - 24	27 - 30	28 - 31	28 - 31	33 - 36	NA	NA
	16	Waist								20 - 24	29 - 32	27 - 30	27 - 32	19 - 23	14 - 17	NA
		Contact								16 - 18	35 - 38	28 - 32	28 - 30	22 - 25	19 - 21	NA
	15	Waist						21 - 24	19 - 23	16 - 20	11 - 14	4 - 7	17 - 21	6 - 9	11 - 13	8 - 11
		Contact						22 - 24	16 - 20	14 - 17	11 - 13	4 - 7	9 - 13	7 - 10	18 - 21	13 - 15
	14	Waist						13 - 15	11 - 13	2 - 5	12 - 14	3 - 5	13 - 15	6 - 9	13 - 15	5 - 8
		Contact				NM	NM	19 - 21	12 - 14	3 - 5	12 - 14	6 - 7	12 - 14	7 - 11	17 - 19	4 - 8
	13	Waist				17 - 23	15 - 22	3 - 5	9 - 11	1 - 3	10 - 12	1 - 3	10 - 12	1 - 4	9 - 11	1 - 4
		Contact				19 - 23	15 - 20	13 - 14	12 - 15	4 - 5	8 - 10	2 - 5	14 - 16	3 - 7	10 - 12	4 - 7
	12	Waist				18 - 21	13 - 15	1 - 3	11 - 13	5 - 7	7 - 9	1 - 3	11 - 13	3 - 6	9 - 11	3 - 7
		Contact				17 - 22	14 - 16	2 - 5	12 - 14	2 - 6	8 - 10	4 - 7	13 - 16	4 - 8	14 - 17	5 - 8
	11	Waist				9 - 11	7 - 10	3 - 6	10 - 12	5 - 7	6 - 8	6 - 9	17 - 19	3 - 7	10 - 12	8 - 11
		Contact				18 - 22	15 - 20	3 - 6	10 - 12	5 - 9	9 - 11	6 - 9	17 - 19	8 - 12	9 - 13	1 - 3
	10	Waist				11 - 13	8 - 10	10 - 12	9 - 11	1 - 2	5 - 7	7 - 10	9 - 12	4 - 7	6 - 8	7 - 9
		Contact				10 - 14	9 - 11	11 - 13	9 - 11	4 - 7	8 - 10	8 - 9	5 - 8	7 - 9	7 - 10	8 - 10
	9	Waist				12 - 15	9 - 11	7 - 10	10 - 13	10 - 12	7 11	5 - 8	7 - 9	5 - 6	7 - 9	7 - 9
		Contact				10 - 13	9 - 11	9 - 11	10 - 14	8 - 11	8 - 10	9 - 11	7 - 10	6 - 8	8 - 9	8 - 9
	8	Waist				8 - 10	8 - 11	8 - 10	7 - 9	6 - 7	6 - 8	8 - 10	6 - 8	6 - 9	5 - 8	6 - 8
		Contact				8 - 11	8 - 11	9 - 12	9 - 11	10 - 12	7 - 10	6 - 8	7 - 9	8 - 10	6 - 8	7 - 11
	7	Waist				9 - 12	10 - 11	7 - 10	7 - 8	7 - 10	7 - 9	7 - 10	8 - 10	NA	NA	NA
		Contact				10 - 12	12 - 14	9 - 11	6 - 8	8 - 10	8 - 11	5 - 9	8 - 10			
	6	Waist				8 - 10	6 - 9	7 - 9	7 - 10	7 - 9	5 - 8	6 - 9	NA	NA	NA	5 - 8
		Contact				8 - 10	8 - 10	8 - 10	9 - 11	10 - 13	6 - 8	8 - 10				7 - 10
	5	Waist	57 - 60	77 - 80	65 - 68	8 - 11	7 - 10	6 - 10	6 - 8	8 - 10	5 - 8	9 - 11	6 - 8	7 - 9	5 - 7	10 - 13
		Contact	48 - 50	92 - 94	75 - 77	9 - 10	8 - 10	7 - 11	7 - 10	9 - 11	7 - 11	10 - 13	8 - 10	6 - 10	8 - 10	6 - 10
	4	Waist	67 - 69	96 - 98	83 - 85	20 - 23	8 - 10	8 - 11	8 - 9	5 - 8	6 - 9	7 - 10	7 - 9	9 - 11	5 - 7	7 - 10
		Contact	57 - 60	110 - 114	84 - 88	9 - 11	10 -12	8 - 11	7 - 9	8 - 11	7 - 9	9 - 11	10 - 13	6 - 8	8 - 12	10 - 13
	3	Waist	50 - 54	76 - 70	74 - 77	35 - 39	9 - 10	8 - 10	6 - 9	7 - 10	7 - 10	7 - 10	NM	NM	NM	NM
		Contact	64 - 68	83 - 85	85 - 87	35 - 37	12 - 14	9 - 10	8 - 11	9 - 12	9 - 12	10 - 14				
	2	Waist	NM	NM	NM	9 - 11	7 - 10	8 - 10	7 - 10	7 - 10	7 - 12	8 - 12				
		Contact				12 - 13	9 - 11	11 - 14	9 - 11	8 - 12	10 - 13	9 - 13				
	1	Waist				12 - 14	8 - 9	10 - 14	7 - 9	8 - 10	10 - 14	10 - 12				
		Contact				6 - 7	9 - 10	10 - 12	8 - 11	5 - 8	7 - 12	10 - 13				
	0	Waist				11 - 13	9 - 11	8 - 10	8 - 9	7 - 9	8 - 11	7 - 10				
		Contact				10 - 12	10 - 12	11 - 13	12 - 13	6 - 8	9 - 12	9 - 12				
			A	B	C	D	E	F	G	H	I	J	K	L	M	N

All measurements were collected using Fluke Pressurized Ionization Chamber (FPIC) Model 451P.
All FPIC gamma measurement are in microroentgen per hour (µR/hr).
All indoor measurements were collected within a 10-feet by 10-feet grid.
Background gamma values = Waist: 7 - 10 µR/hr, Contact: 9 - 10 µR/hr.
NM - Locations not measured and less than 10-feet by 10-feet.
NA - Locations with no access.
- Concrete wall of building.
- Outdoor areas.
- Locations with FPIC gamma values significantly above background.
Hot spot values in red exceed background FPIC gamma values.

Hot Spot Locations Gamma Survey Results		
Hot Spot Locations		**Gamma Value (µR/hr)**
Waist	Hot Spot-1 (Grid D04)	97 - 100
Contact		158 - 160
Waist	Hot Spot-2 (Grid K11)	24 - 27
Contact		36 - 40
Waist	Hot Spot-3 (Grid F14)	37 - 40
Contact		49 - 53
Waist	Hot Spot-4 (Grid K16)	39 - 43
Contact		83 - 89



Legend

- Gamma Survey Location
- Exterior Wall
- Interior Wall
- Entry door
- Transect/ Row Grid lines
- OF - Office
- ST - Storage
- WH - Warehouse
- HW - Hallway
- CL - Customer Lounge
- CR - Communications Room
- WA - Wood Work Area
- FY - Foyer
- BT - Bathroom
- LB - Lobby
- SR - Showroom

Gamma survey was conducted using Fluke Pressurized Ionization Chamber (FPIC)
Background gamma values: Waist= 8 - 11 microroentgen per hour (µR/hr), Contact= 9 - 10 µR/hr
Values in red indicate hot spots with significant exceedance above background gamma values.
- Locations with gamma values significantly higher than background gamma values.

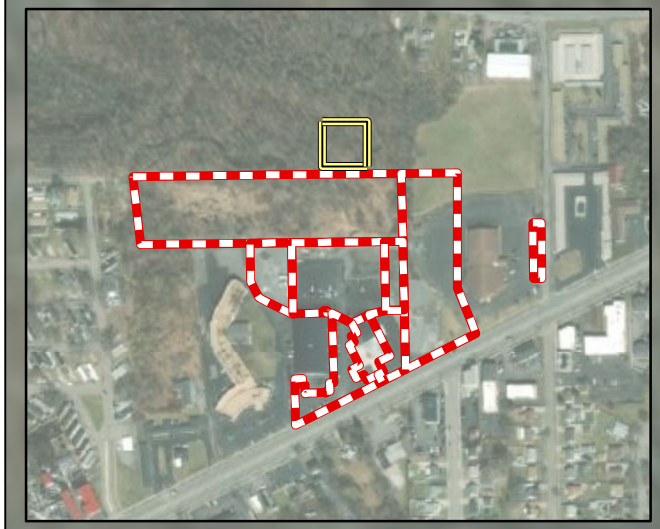
Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC; Pro-West & Associates, Inc.; On-Site Environmental, Inc.; and Sovereign Consulting, Inc.

Figure 3B:
Interior Gamma Survey Map
Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D004

EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
PROJECT #:	40200.021.036.2017



BKGRD-S015
13,780 CPM

BKGRD-S014
15,416 CPM

BKGRD-S013
15,439 CPM

BKGRD-S010
15,235 CPM

BKGRD-S011
15,471 CPM

BKGRD-S012
15,790 CPM

BKGRD-S009
15,809 CPM

BKGRD-S008
14,995 CPM

BKGRD-S007
16,751 CPM

BKGRD-S005
15,522 CPM

BKGRD-S016
15,317 CPM

BKGRD-S004
13,836 CPM

BKGRD-S006
15,768 CPM

BKGRD-S002
15,739 CPM

BKGRD-S003
14,681 CPM

BKGRD-S001
14,920 CPM

AREA 6

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Background Sample Location
- Background Sample Area Boundary
- Area of Concern

Notes:
3x3: Ludlum 2245.2 with Sodium Iodide Scintillator measured in counts per minute (CPM) with shielding.
Measurements collected in Scaler mode for 1-minute.
Average background reading: 15,279 CPM (STDEV 716).

N

0 5 10 20 30 40 Feet

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Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 4: Exterior Background Gamma Scan & Sample Location Map

NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NEW YORK

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT
& RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	K. HEULITT
EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
FILENAME:	200918_NFB_BackgroundSampling.mxd

DATE MODIFIED: 10/9/2020

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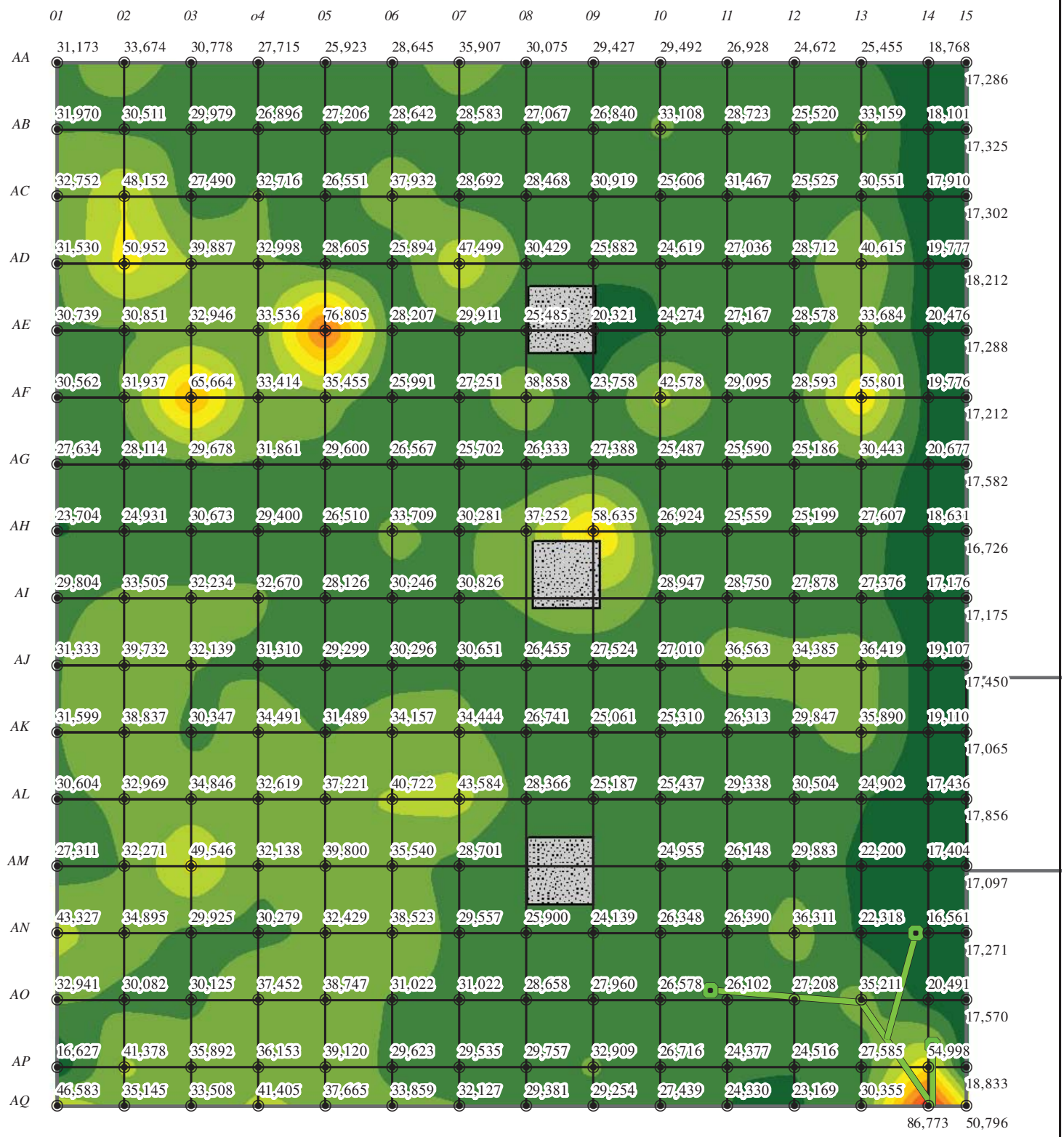

Legend

- Gamma Scan Result
- Structure Walls
- 2-Foot by 2-Foot Grid
- Sewer Point Structure
- Exposed Sewer Lines
- Poured Concrete Footers

N

Distance measurements presented in feet.
Gamma measurements presented in counts per minute (CPM).
Measurements captured over a one minute interval.

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 5A: Pre-Excavation Office Area Gamma Scan Map

Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

DATE MODIFIED: 8/25/2016

GIS ANALYST:	P. Lisichenko
EPA OSC:	P. Lisichenko
RST SPM:	S. Quinn
FILENAME:	160825_NFB_OFFICEGAMMA.MXD

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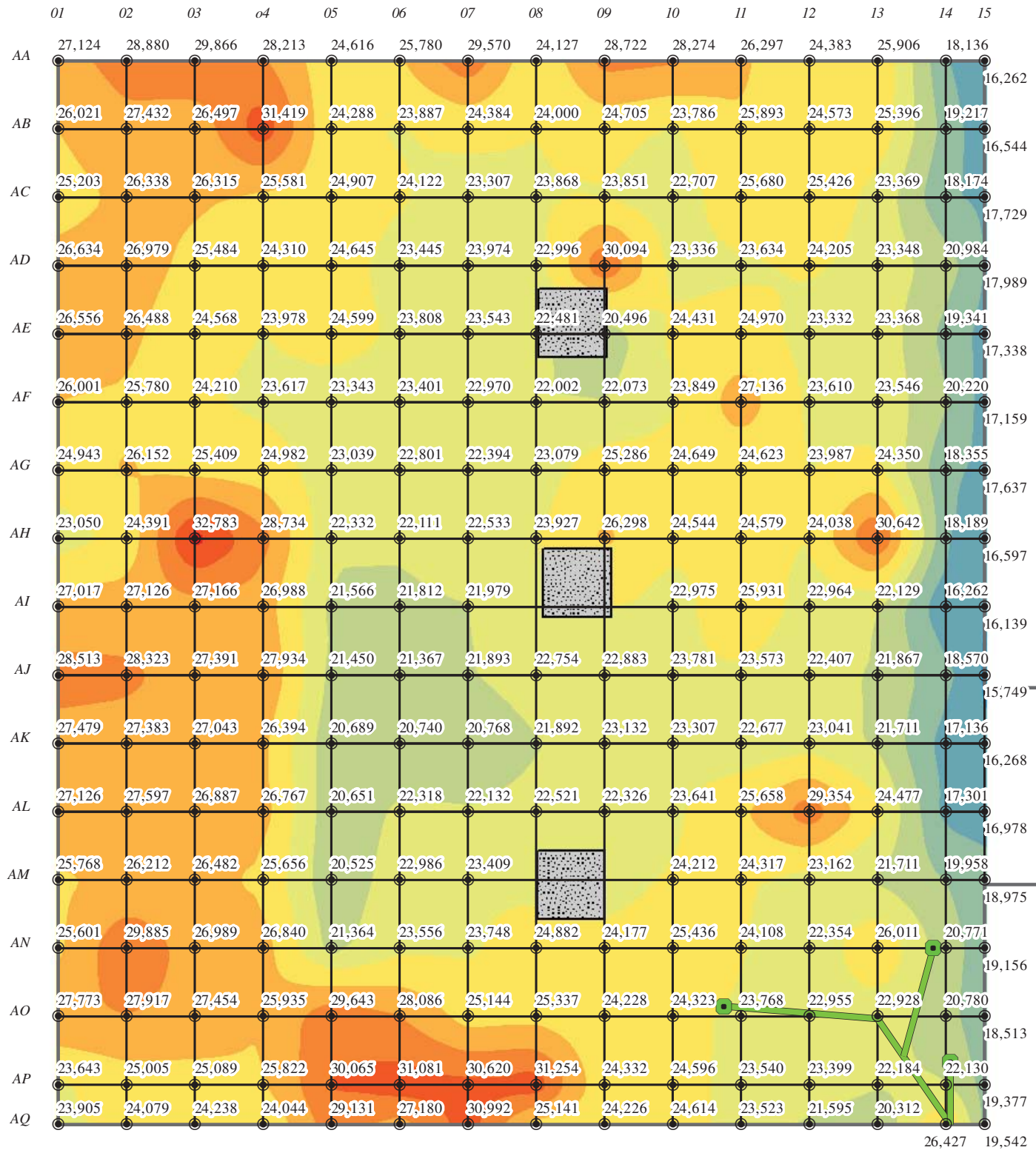

Legend

- Gamma Scan Result
- Structure Walls
- 2-Foot by 2-Foot Grid
- Sewer Point Structure
- Exposed Sewer Lines
- Poured Concrete Footers

N

Distance measurements presented in feet.
Gamma measurements presented in counts per minute (CPM).
Measurements captured over a one minute interval.

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 5B: Post-Excavation Office Area Gamma Scan Map

Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	P. Lisichenko
EPA OSC:	P. Lisichenko
RST SPM:	S. Quinn
FILENAME:	160916_NFB_OFFICEGAMMA_C.MXD

DATE MODIFIED: 9/16/2016

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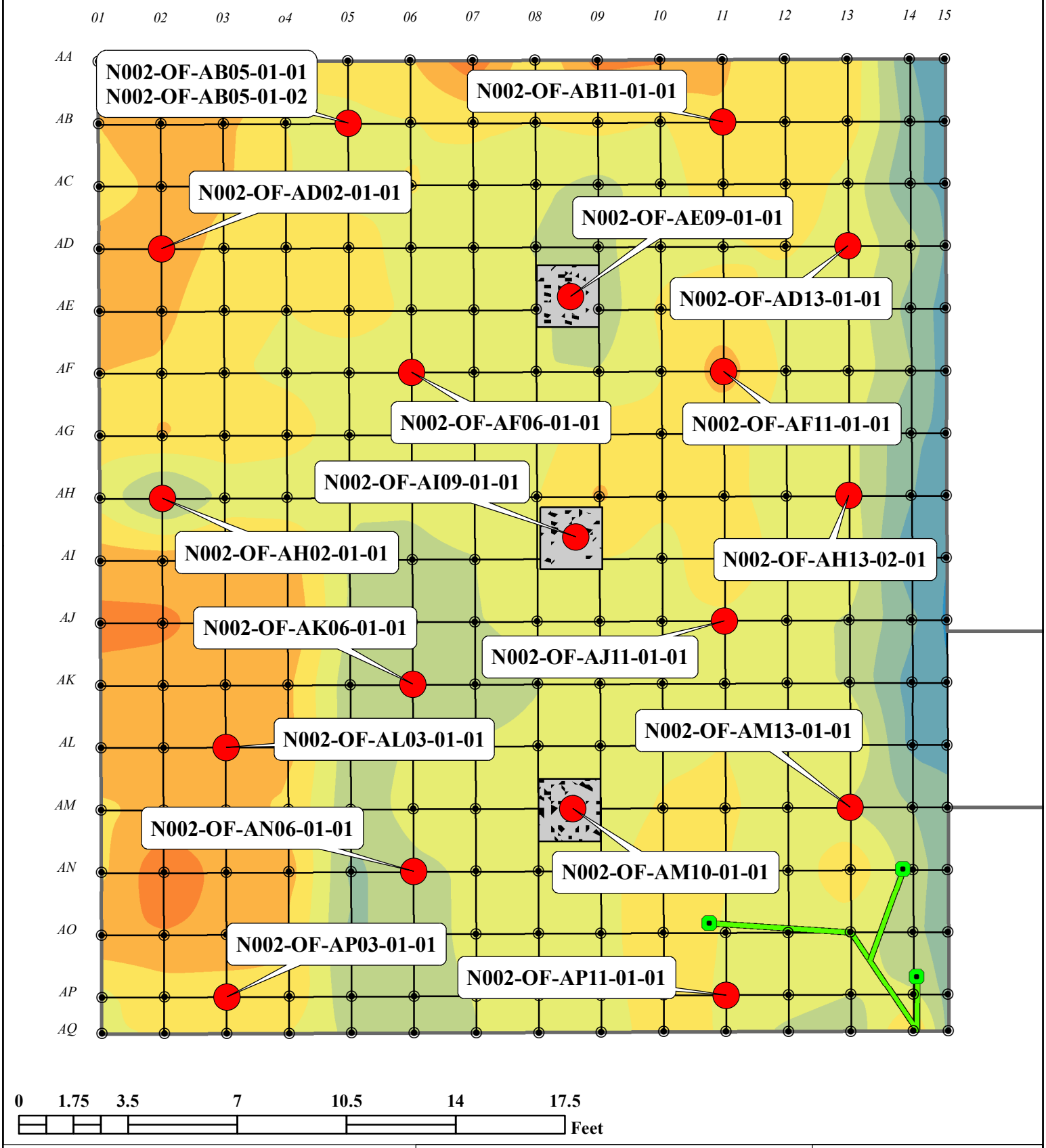

Legend

- Gamma Scan Result
- Structure Walls
- 2-Foot by 2-Foot Grid
- Sewer Point Structure
- Exposed Sewer Lines
- Poured Concrete Footers

Distance measurements presented in feet.
Gamma measurements presented in counts in 1-minute (static).
Measurements captured over a one minute interval.

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 5C: Office Area Post-Excavation Sample Location Map

Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

DATE MODIFIED: 10/2/2020	
GIS ANALYST:	M. LANG
EPA OSC:	P. LISICHENKO
START V SPM:	B. NWOSU
FILENAME:	201001_NFB_RV1_CONFSAMPLOC.MXD

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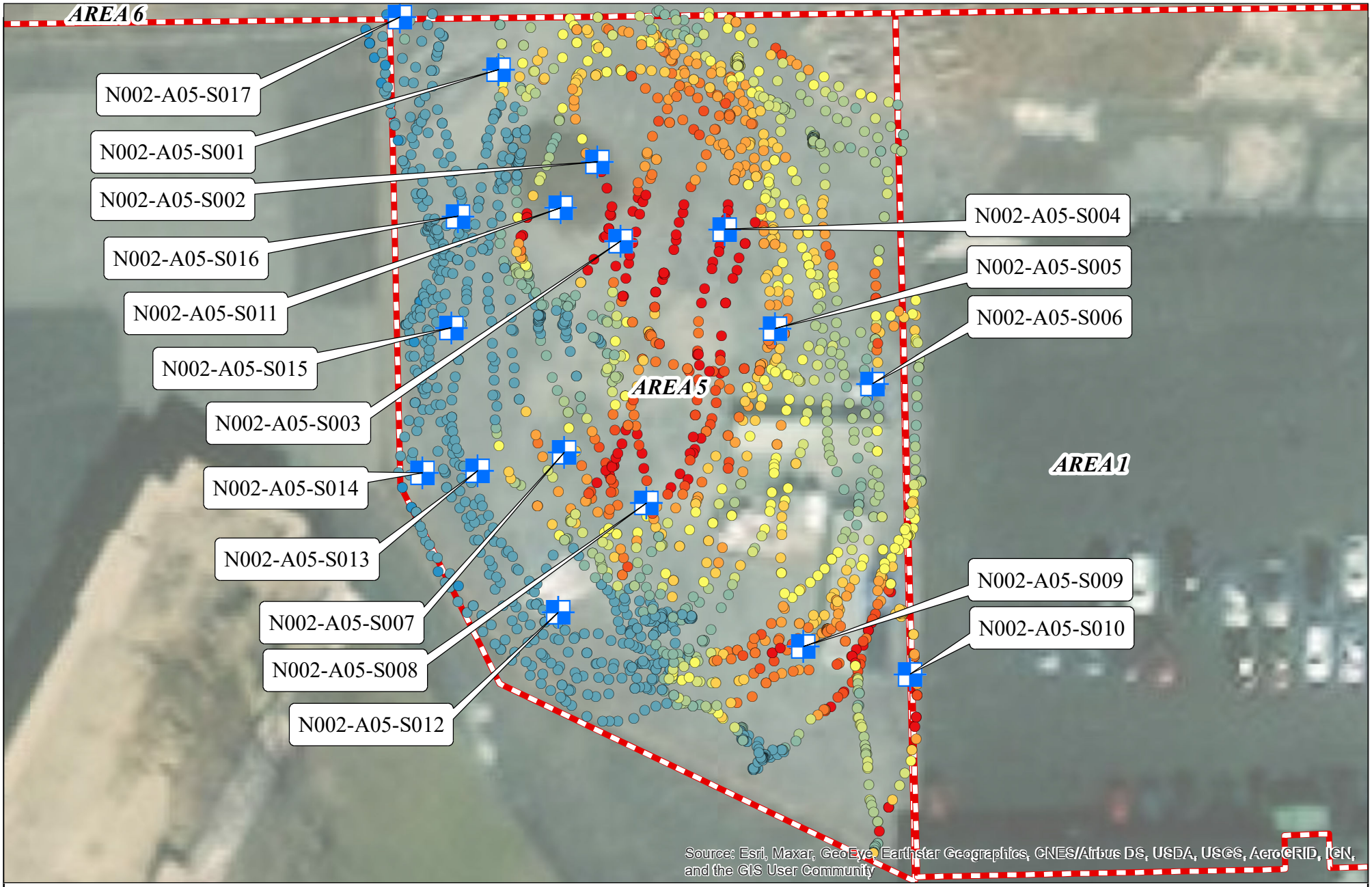

Legend

Gamma Reading (uR/hr)

- < 15 (1x)
- 15 - 30 (2x)
- 30 - 45 (3x)
- 45 - 60 (4x)
- 60 - 75 (5x)
- 75 - 90 (6x)
- 90 - 105 (7x)
- 105 - 120 (8x)
- 120 - 135 (9x)
- 135 - 150 (10x)
- >150

Area of Concern

Sample Location

Notes:
Gamma survey conducted with Ludlum 3x3 Sodium Iodide Detector.
Gamma survey measurements presenting in micro-Roentgen per hour (µR/hr).
Background reading: 15 µR/hr.
Area 5 maximum gamma reading: 365 µR/hr.

0 17.5 35 70 Feet

N

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 6A: Area 5 Pre-Excavation Gamma Scan Map & Sample Location Map

NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NEW YORK

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT
& RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	K. HEULITT
EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
FILENAME:	200918_NFB_A5_PreSamleLocation.mxd

DATE MODIFIED: 10/9/2020

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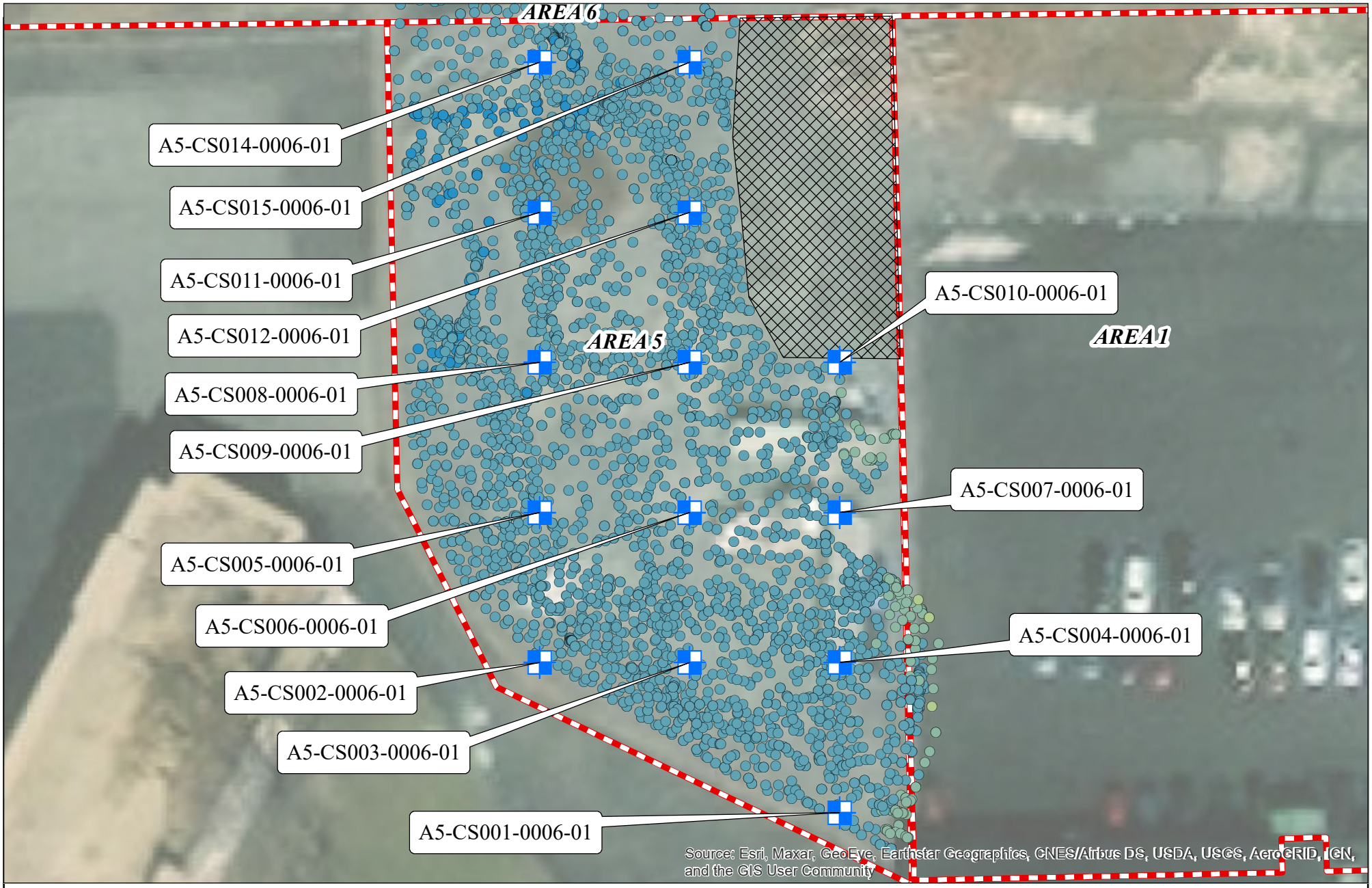

Legend

Gamma Reading (uR/hr)

- < 15 (1x)
- 15 - 30 (2x)
- 30 - 45 (3x)
- 45 - 60 (4x)
- 60 - 75 (5x)
- 75 - 90 (6x)
- 90 - 105 (7x)
- 105 - 120 (8x)
- 120 - 135 (9x)
- 135 - 150 (10x)
- >150

Area of Concern

Staged Soils

Sample Location

Notes:
Gamma survey conducted with Ludlum 3x3 Sodium Iodide Detector.
Gamma survey measurements presenting in micro-Roentgen per hour (µR/hr).
Background reading: 15 µR/hr.
Area 5 maximum gamma reading: 51 µR/hr.

0 17.5 35 70 Feet

N

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 6B: Area 5 Post-Excavation Gamma Scan & Sample Location Map

NIAGARA FALLS BOULEVARD SITE
NIAGARA FALLS, NEW YORK

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT
& RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	K. HEULITT
EPA OSC:	P. LISICHENKO
RST SPM:	S. QUINN
FILENAME:	200918_NFB_A5_PostGamma.mxd

DATE MODIFIED: 10/9/2020

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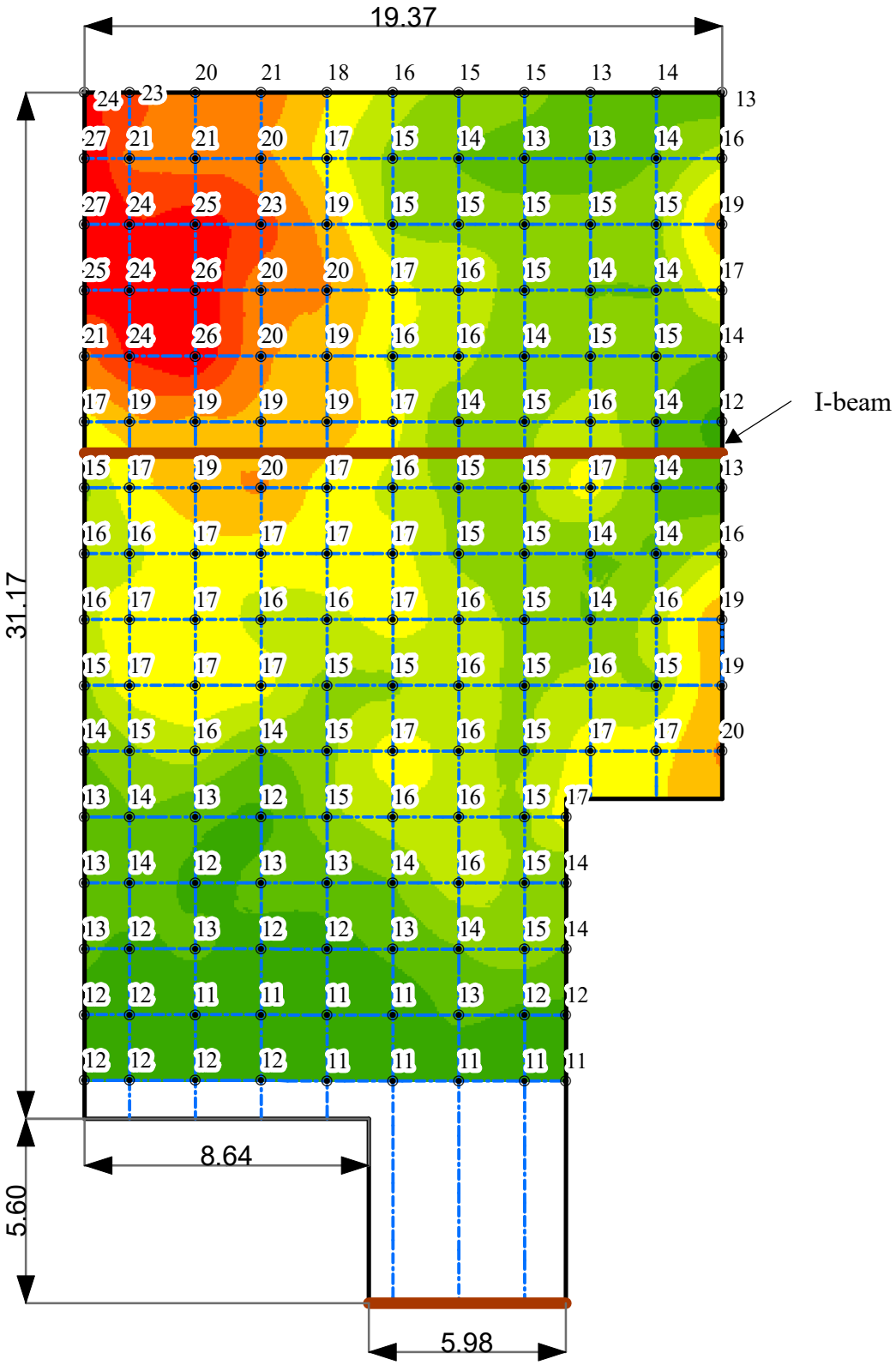

Distance measurements presented in feet.
Gamma measurements presented in micro Roentgen per hour.

Weston Solutions, Inc.
Federal East Division

In Association With
Eco-Risk; Avatar Environmental, LLC;
Pro-West & Associates, Inc.;
On-Site Environmental, Inc.;
and Sovereign Consulting, Inc.

Figure 7: ST-5 Pre-Excavation Gamma Scan Map

Niagara Falls Boulevard Site
Niagara Falls, New York

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V
CONTRACT # 68HE0319D0004

GIS ANALYST:	K. Heulitt
EPA OSC:	P. Lisichenko
RST SPM:	S. Quinn
FILENAME:	200929_NFB_ST5GAMMA.MXD

DATE MODIFIED: 10/9/2020

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ATTACHMENT B

Tables

Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
8/23/2016	BKGRD-S001	Webber Property (Background)	BKGRD-S001-0006-01	0-6	Soil	Grab	Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	BKGRD-S002		BKGRD-S002-0006-01	0-6			Field Sample	
	BKGRD-S003		BKGRD-S003-0006-01	0-6			Field Sample	
	BKGRD-S004		BKGRD-S004-0006-01	0-6			Field Sample	
	BKGRD-S005		BKGRD-S005-0006-01	0-6			Field Sample	
	BKGRD-S006		BKGRD-S006-0006-01	0-6			Field Sample	
	BKGRD-S007		BKGRD-S007-0006-01	0-6			Field Sample	
	BKGRD-S008		BKGRD-S008-0006-01	0-6			Field Sample	
	BKGRD-S009		BKGRD-S009-0006-01	0-6			Field Sample	
	BKGRD-S010		BKGRD-S010-0006-01	0-6			Field Sample	
	BKGRD-S011		BKGRD-S011-0006-01	0-6			Field Sample	
	BKGRD-S012		BKGRD-S012-0006-01	0-6			Field Sample	
	BKGRD-S013		BKGRD-S013-0006-01	0-6			Field Sample	
	BKGRD-S014		BKGRD-S014-0006-01	0-6			Field Sample	
	BKGRD-S015		BKGRD-S015-0006-01*	0-6			Field Sample	
	BKGRD-S015		BKGRD-S015-0006-02	0-6			Field Duplicate	
	BKGRD-S016		BKGRD-S016-0006-01	0-6			Field Sample	
6/14/2016	N002-SB003	Office Area and Storage 4	N002-CC003-01	0-3	Concrete	Grab	Field Sample	
	N002-SB006		N002-CC006-01	0-3			Field Sample	
			N002-CC006-02	0-3			Field Duplicate	
	N002-SB007		N002-CC007-01	0-3			Field Sample	
	N002-SB011		N002-CC011-01*	0-3			Field Sample	
	N002-SB013		N002-CC013-01	0-3			Field Sample	
	N002-SB016		N002-CC016-01	0-3			Field Sample	
	Not Applicable	Not Applicable	RB-N-160615	Not Applicable	DI Water		Rinsate Blank	Radium-226, Radium 228, Isotopic Uranium, Isotopic Thorium
7/10/2016	N002-SB001	Storage 3 / Wood Work Area	N002-CC001-01	0-4	Concrete		Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	N002-SB003		N002-CC002-01*	0-4			Field Sample	
	N002-SB002		N002-CC002-02	0-4			Field Duplicate	
	Not Applicable	Not Applicable	RB-N-160710	Not Applicable	DI Water		Rinsate Blank	Radium-226, Radium 228, Isotopic Uranium, Isotopic Thorium
9/15/2016	N004-S001	Church Property Utility Building (Background)	N004-CC001-0006-01	0-6	Concrete		Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	N004-S002		N004-CC002-0006-01	0-6			Field Sample	
9/18/2016	N002-S015	Storage 5	N002-CC015-0004-01	0-4			Field Sample	
9/19/2016	N002-S016		N002-CC016-0004-01*	0-4			Field Sample	
			N002-CC016-0004-02	0-4			Field Duplicate	
	N002-S017		N002-CC017-0004-01	0-4			Field Sample	
	N002-S018		N002-CC018-0004-01	0-4			Field Sample	
	N002-S019		N002-CC019-0004-01	0-4			Field Sample	
7/11/2016	N002-BKF001	Clean Fill Vendor Facility	N002-BKF001-01	0-6	P-Gravel		Field Sample	
7/12/2016	N002-BKF002	Clean Fill Vendor	N002-BKF002-01	0-6	Gravel		Field Sample	

Notes

*Additional sample volume collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis

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Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
12/5/2016	N002-WD-A5	Area 5 (Waste Characterization)	N002-WD-A5-01-01*	0-6	Soil	Composite	Field Sample	TCLP (VOCs, SVOCS, Pesticides, Herbicides, and Metals including Mercury
			N002-WD-A5-01-02	0-6			Field Duplicate	
			N002-WD-A5-02-01	0-6			Field Sample	
			N002-WD-A5-03-01	0-6			Field Sample	
			N002-WD-A5-04-01	0-6			Field Sample	
			N002-WD-A5-05-01	0-6			Field Sample	
			N002-WD-A5-06-01	0-6			Field Sample	
	N002-WD-OF	Office Area (Waste Characterization)	N002-WD-OF-01-01	0-6			Field Sample	
			N002-WD-OF-02-01	0-6			Field Sample	
9/15/2016	N004-S001	Church Property Utility Building (Background for Pre-Excavation)	N004-S001-0511-01	5-11	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N004-S001-1117-01	11-17			Field Sample	
			N004-S001-1723-01	17-23			Field Sample	
			N004-S001-2329-01	23-29			Field Sample	
	N004-S002		N004-S002-0612-01	6-12			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N004-S002-1218-01	12-18			Field Sample	
			N004-S002-1824-01	18-24			Field Sample	
			N004-S002-2430-01	24-30			Field Sample	
9/18/2016	N002-S015	Storage 5 (Pre-Excavation)	N002-S015-0612-01	6-12	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-S015-1218-01	12-18			Field Sample	
			N002-S015-1824-01	18-24			Field Sample	
			N002-S015-2430-01	24-30			Field Sample	
9/19/2016	N002-S016		N002-S016-0410-01*	4-10			Field Sample	
			N002-S016-0410-02	4-10			Field Duplicate	
			N002-S016-1012-01	10-12			Field Sample	
	N002-S017		N002-S017-0408-01	4-8			Field Sample	
	N002-S018		N002-S018-0410-01	4-10			Field Sample	
			N002-S018-1016-01	10-16			Field Sample	
			N002-S018-1622-01	16-22			Field Sample	
			N002-S018-2228-01	22-28			Field Sample	
	N002-S019		N002-S019-0409-01*	4-9			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-S019-0409-02	4-9			Field Duplicate	
9/20/2016	N002-OF-AB04	Office Area (Pre-Excavation)	N002-OF-AB04-01-01	0-4	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	N002-OF-AD09		N002-OF-AD09-01-01	0-4			Field Sample	
	N002-OF-AH03		N002-OF-AH03-01-01	0-4			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	N002-OF-AH13		N002-OF-AH13-01-01	0-4			Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
	N002-OF-AI15		N002-OF-AI15-01-01	0-4			Field Sample	
	N002-OF-AL12		N002-OF-AL12-01-01	0-4			Field Sample	
	N002-OF-AP08		N002-OF-AP08-01-01	0-4			Field Sample	
	N002-OF-AQ07		N002-OF-AQ07-01-01	0-4			Field Sample	

Notes
*Additional sample volume collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis
TCLP - Toxicity Characteristic Leaching Procedure; VOC - Volatile Organic Compound; SVOC - Semivolatile Organic Compound

Sample analyzed on-site via High Purity Germanium (HPGe) detector
Sample analyzed by off-site laboratory and on-site via HPGe detector

Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
8/4/2016	N002-OF-AI09	Office Area (Pre-Excavation)	N002-OF-AI09-01-01	0-4	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy; Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
8/16/2016	N002-OF-AE09		N002-OF-AE09-01-01	0-4			Field Sample	
	N002-OF-AM10		N002-OF-AM10-01-01	0-4			Field Sample	
9/9/2016	N002-OF-AL03		N002-OF-AL03-01-01	0-4			Field Sample	
	N002-OF-AP03		N002-OF-AP03-01-01	0-4			Field Sample	
9/22/2016	N002-OF-AB11	Office Area (Post-Excavation)	N002-OF-AB11-01-01	0-4			Field Sample	
	N002-OF-AD13		N002-OF-AD13-01-01	0-4			Field Sample	
	N002-OF-AH02		N002-OF-AH02-01-01	0-4			Field Sample	
9/23/2016	N002-OF-AF06		N002-OF-AF06-01-01	0-4			Field Sample	
	N002-OF-AJ11		N002-OF-AJ11-01-01	0-4			Field Sample	
	N002-OF-AK06		N002-OF-AK06-01-01	0-4			Field Sample	
	N002-OF-AN06		N002-OF-AN06-01-01	0-4			Field Sample	
	N002-OF-AP11		N002-OF-AP11-01-01	0-4			Field Sample	
9/22/2016	N002-OF-AB05		N002-OF-AB05-01-01*	0-4			Field Sample	
	N002-OF-AB05		N002-OF-AB05-01-02	0-4			Field Duplicate	
	N002-OF-AF11		N002-OF-AF11-01-01	0-4			Field Sample	
9/23/2016	N002-OF-AD02		N002-OF-AD02-01-01	0-4			Field Sample	
	N002-OF-AH13		N002-OF-AH13-02-01	0-4			Field Sample	
	N002-OF-AM13		N002-OF-AM13-01-01	0-4			Field Sample	
10/5/2016	N002-OF-AJ01	Office Area - Ramp (Post-Excavation)	N002-OF-AJ01-01-01	0-4			Field Sample	
	N002-OF-AN02		N002-OF-AN02-01-01	0-4			Field Sample	
10/14/2016	N002-A01-S001	Area 1 (Pre-Excavation)	N002-A01-S001-0006-01	0-6	Soil	Grab	Field Sample	
			N002-A01-S001-0006-01b	0-6			Field Sample	
			N002-A01-S001-0612-01	6-12			Field Sample	
10/12/2016	N002-A05-S001	Area 5 (Pre-Excavation)	N002-A05-S001-0006-01	0-6	Soil	Grab	Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S001-0612-01	6-12			Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S001-1218-01*	12-18			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S001-1218-02	12-18			Field Duplicate	
	N002-A05-S002		N002-A05-S002-0006-01	0-6			Field Sample	
			N002-A05-S002-0612-01	6-12			Field Sample	
			N002-A05-S002-1218-01	12-18			Field Sample	
			N002-A05-S002-1824-01	18-24			Field Sample	
	N002-A05-S003		N002-A05-S003-0006-01*	0-6			Field Sample	
			N002-A05-S003-0006-02	0-6			Field Duplicate	
			N002-A05-S003-0612-01	6-12			Field Sample	
			N002-A05-S003-1218-01	12-18			Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S003-1824-01	18-24			Field Sample	

Notes

*Additional sample volume collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis

Sample analyzed on-site via High Purity Germanium (HPGe) detector
Sample analyzed by off-site laboratory and on-site via HPGe detector

Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
10/12/2016	N002-A05-S004	Area 5 (Pre-Excavation)	N002-A05-S004-0006-01	0-6	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S004-0612-01	6-12			Field Sample	
			N002-A05-S004-1218-01	12-18			Field Sample	
	N002-A05-S005		N002-A05-S005-0006-01	0-6			Field Sample	
			N002-A05-S005-0612-01	6-12			Field Sample	
			N002-A05-S005-1218-01	12-18			Field Sample	
			N002-A05-S005-1824-01	18-24			Field Sample	
	N002-A05-S006		N002-A05-S006-0006-01	0-6			Field Sample	
			N002-A05-S006-0612-01	6-12			Field Sample	
	N002-A05-S007		N002-A05-S007-0006-01	0-6			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S007-0612-01	6-12			Field Sample	
			N002-A05-S007-1218-01	12-18			Field Sample	
			N002-A05-S007-1824-01	18-24			Field Sample	
	N002-A05-S008		N002-A05-S008-0006-01	0-6			Field Sample	
			N002-A05-S008-0612-01	6-12			Field Sample	
			N002-A05-S008-1218-01	12-18			Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S008-1824-01	18-24			Field Sample	
			N002-A05-S008-2426-01	24-26			Field Sample	
	N002-A05-S009		N002-A05-S009-0006-01	0-6			Field Sample	
			N002-A05-S009-0612-01	6-12			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S009-1218-01	12-18			Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S009-1824-01	18-24			Field Sample	
			N002-A05-S009-2430-01	24-30			Field Sample	
			N002-A05-S009-3630-01	30-36			Field Sample	
	N002-A05-S010		N002-A05-S010-0006-01	0-6			Field Sample	
			N002-A05-S010-0612-01	6-12			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S010-1218-01	12-18			Field Sample	On-Site HPGe Gamma Spectroscopy
	N002-A05-S011		N002-A05-S011-0006-01	0-6			Field Sample	Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
			N002-A05-S011-0612-01	6-12			Field Sample	
			N002-A05-S011-1218-01	12-18			Field Sample	
			N002-A05-S011-1824-01	18-24			Field Sample	
			N002-A05-S011-2430-01	24-30			Field Sample	
			N002-A05-S011-3036-01	30-36			Field Sample	
			N002-A05-S011-3642-01	36-42			Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S011-4248-01	42-48			Field Sample	

Notes

Sample analyzed on-site via High Purity Germanium (HPGe) detector
Sample analyzed by off-site laboratory and on-site via HPGe detector

Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
10/24/2016	N002-A05-S012	Area 5 (Excavation)	N002-A05-S012-0006-01	0-6	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy
			N002-A05-S012-0612-01	6-12			Field Sample	
			N002-A05-S012-1218-01	12-18			Field Sample	
			N002-A05-S012-1830-01	18-30			Field Sample	
			N002-A05-S012-3036-01	30-36			Field Sample	
	N002-A05-S013		N002-A05-S013-0006-01	0-6			Field Sample	
			N002-A05-S013-0612-01	6-12			Field Sample	
			N002-A05-S013-1218-01	12-18			Field Sample	
			N002-A05-S013-1824-01	18-24			Field Sample	
			N002-A05-S013-2430-01	24-30			Field Sample	
			N002-A05-S013-3036-01	30-36			Field Sample	
			N002-A05-S013-3642-01	36-42			Field Sample	
			N002-A05-S013-4248-01	42-48			Field Sample	
10/25/2016	N002-A05-S014		N002-A05-S014-0008-01	0-8			Field Sample	
			N002-A05-S014-0814-01	8-14			Field Sample	
			N002-A05-S014-1424-01	14-24			Field Sample	
			N002-A05-S014-2434-01	24-34			Field Sample	
			N002-A05-S014-3442-01	34-42			Field Sample	
			N002-A05-S014-4252-01	42-52			Field Sample	
	N002-A05-S015		N002-A05-S015-0010-01	0-10			Field Sample	
			N002-A05-S015-1016-01	10-16			Field Sample	
			N002-A05-S015-1622-01	16-22			Field Sample	
			N002-A05-S015-2230-01*	22-30			Field Sample	
			N002-A05-S015-2230-02	22-30			Field Duplicate	
			N002-A05-S015-3040-01	30-40			Field Sample	
			N002-A05-S015-4050-01	40-50			Field Sample	
	N002-A05-S016		N002-A05-S016-0008-01	0-8			Field Sample	
			N002-A05-S016-0818-01*	8-18			Field Sample	
			N002-A05-S016-0818-02	8-18			Field Duplicate	
			N002-A05-S016-1828-01	18-28			Field Sample	
			N002-A05-S016-2838-01	28-38			Field Sample	
			N002-A05-S016-3848-01	38-48			Field Sample	
	N002-A05-S017		N002-A05-S017-0006-01	0-6			Field Sample	
			N002-A05-S017-0612-01	6-12			Field Sample	
			N002-A05-S017-1218-01	12-18			Field Sample	
			N002-A05-S017-1824-01	18-24			Field Sample	
10/14/2016	N002-A07-S001	Area 7 (Pre-Excavation)	N002-A07-S001-0006-01	0-6			Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)

Notes

*Additional sample volume collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis

Sample analyzed on-site via High Purity Germanium (HPGe) detector
Sample analyzed by off-site laboratory and on-site via HPGe detector

Table 1: Sample Collection Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 2016 through December 2016

Sample Date	Sample Location	Sample Location Description	Sample Number	Sample Depth (Inches)	Sample Matrix	Collection Method	Sample Type	Analyses
12/8/2016	A5-CS001	Area 5 (Post-Excavation)	A5-CS001-0006-01	0-6	Soil	Grab	Field Sample	On-Site HPGe Gamma Spectroscopy Laboratory Gamma Spectroscopy (Modified) & Alpha Spectroscopy (Isotopic Uranium, Isotopic Thorium)
12/9/2016	A5-CS002		A5-CS002-0006-01	0-6			Field Sample	
12/8/2016	A5-CS003		A5-CS003-0006-01	0-6			Field Sample	
	A5-CS004		A5-CS004-0006-01*	0-6			Field Sample	
			A5-CS004-0006-02	0-6			Field Duplicate	
12/9/2016	A5-CS005		A5-CS005-0006-01	0-6			Field Sample	
12/8/2016	A5-CS006		A5-CS006-0006-01	0-6			Field Sample	
	A5-CS007		A5-CS007-0006-01	0-6			Field Sample	
	A5-CS008		A5-CS008-0006-01	0-6			Field Sample	
	A5-CS009		A5-CS009-0006-01	0-6			Field Sample	
	A5-CS010		A5-CS010-0006-01	0-6			Field Sample	
	A5-CS011		A5-CS011-0006-01	0-6			Field Sample	
	A5-CS012		A5-CS012-0006-01	0-6			Field Sample	
12/13/2016	A5-CS014		A5-CS014-0006-01	0-6			Field Sample	
	A5-CS015		A5-CS015-0006-01	0-6			Field Sample	
12/15/2016	A5-LCP01	Area 5 Low Concentration Pile (Post-Excavation)	A5-LCP01-01	0-6	Soil	Grab	Field Sample	
	A5-LCP02		A5-LCP02-01	0-6			Field Sample	
	A5-LCP03		A5-LCP03-01	0-6			Field Sample	
	A5-LCP04		A5-LCP04-01	0-6			Field Sample	
	A5-LCP05		A5-LCP05-01	0-6			Field Sample	
	A5-LCP06		A5-LCP06-01	0-6			Field Sample	
	A5-LCP07		A5-LCP07-01	0-6			Field Sample	
	A5-LCP08		A5-LCP08-01	0-6			Field Sample	
	A5-LCP09		A5-LCP09-01	0-6			Field Sample	
	A5-LCP10		A5-LCP10-01	0-6			Field Sample	

Notes

*Additional sample volume collected for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis

Sample analyzed on-site via High Purity Germanium (HPGe) detector
Sample analyzed by off-site laboratory and on-site via HPGe detector

Table 2: Validated Background (Weber Property) Soil Analytical Results Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
August 23, 2016

	RST 3 Sample Number		BKGRD-S001-0006-01			BKGRD-S002-0006-01			BKGRD-S003-0006-01			BKGRD-S004-0006-01			BKGRD-S005-0006-01			BKGRD-S006-0006-01			BKGRD-S007-0006-01			BKGRD-S008-0006-01			BKGRD-S009-0006-01		
	Sample Depth (inches)		0-6			0-6			0-6			0-6			0-6			0-6			0-6			0-6			0-6		
	Sample Matrix		Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
	Sample Date		8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016		
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																										
Actinium-228 (Ac-228)	EPA 901.1	126,000		U			U			U			U			U			U			U			U		
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.79	J	1.78	0.23	UJ	1.93	0	UJ	1.21	1.82		1.52	1.7	J	1.87	2.68		1.41	1.94		1.49	-0.4	UJ	2.59	1.9		1.09
Cesium-137 (Cs-137)	EPA 901.1	11	0.3		0.11	0.44		0.13	0.3		0.16	0.19		0.14	0.16	J	0.27	0.43		0.13	0.62		0.19	0.57		0.14	0.37		0.14
Lead-212 (Pb-212)	EPA 901.1	661,000	1.06		0.26	1.01		0.24	1.15		0.29	0.89		0.23	0.99		0.3	1.04		0.25	0.76		0.29	1.02		0.27	1.21		0.3
Potassium-40 (K-40)	EPA 901.1	25.9	17.34		3.75	16.02		3.21	16.12		3.67	19.72		3.62	19.35		4.4	17.82		3.34	20		4.06	19.82		3.63	18.44		4.05
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U			U			U			U			U			U			U			U		
Radium-226* (Ra-226)	EPA 901.1	2.48	1.28		0.31	1.06		0.27	1.38		0.38	1.21		0.31	1.34		0.4	1.34		0.35	1.33		0.32	1.29		0.35	1.29		0.32
Radium-228 (Ra-228)	EPA 901.1	15.9	1.01		0.42	0.99		0.33	1.17		0.39	1.14		0.37	1.29		0.44	1.66		0.46	1.68		0.51	1.49		0.39	1.15		0.47
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.29		0.22	0.43		0.15	0.35		0.15	0.27		0.14	0.43		0.15	0.41		0.14	0.48		0.16	0.41		0.13	0.46		0.18
Thorium-234 (Th-234)	EPA 901.1	47,900	3.03		1.76	2.25	J	3.73	0.05	UJ	2.4	0.88	UJ	1.53	2.05	J	2.09	1.99	UJ	1.7	3.68		2.21	2.46	J	4.27	0.05	UJ	2.6
Uranium-235 (U-235)	EPA 901.1	39.2	0.19	R	0.18	0.1	R	0.16	0.27	R	0.14	0.19	R	0.16	0.11	R	0.17	0.05	R	0.18	0.24	R	0.13	0.21	R	0.13	0.05	R	0.15
Thorium-228 (Th-228)	HSL-300	14,100	0.65		0.29	0.85		0.3	0.76		0.28	0.77		0.3	0.72		0.31	0.85		0.28	0.97		0.3	0.78		0.27	0.81		0.27
Thorium-230 (Th-230)	HSL-300	2,090	0.57		0.26	0.72		0.26	0.65		0.25	0.71		0.29	0.76		0.3	0.95		0.29	0.82		0.27	0.92		0.29	0.85		0.28
Thorium-232 (Th-232)	HSL-300	2,020	0.6		0.26	0.63		0.24	0.75		0.27	0.72		0.27	0.84		0.31	0.73		0.25	0.94		0.29	0.86		0.28	0.69		0.24
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.85		0.27	0.76		0.25	0.46		0.2	0.81		0.27	0.89		0.29	0.87		0.26	1.04		0.29	0.97		0.29	1.05		0.31
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.06	J	0.08	0.04	J	0.08	0.04	J	0.08	0.09	J	0.09	0.16	J	0.12	0.16	J	0.12	0.05	J	0.07	0.04	J	0.07	0.08	J	0.08
Uranium-238 (U-238)	HSL-300	3,720	0.83		0.27	0.88		0.27	0.79		0.26	0.94		0.3	0.98		0.3	0.92		0.27	1.08		0.3	1		0.29	1.11		0.32

	RST 3 Sample Number		BKGRD-S010-0006-01			BKGRD-S011-0006-01			BKGRD-S012-0006-01			BKGRD-S013-0006-01			BKGRD-S014-0006-01			BKGRD-S015-0006-01			BKGRD-S015-0006-02			BKGRD-S016-0006-01		
	Sample Depth (inches)		0-6			0-6			0-6			0-6			0-6			0-6			0-6			0-6		
	Sample Matrix		Soil			Soil			Soil			Soil			Soil			Soil			Soil			Soil		
	Sample Date		8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016			8/23/2016		
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																								
Actinium-228 (Ac-228)	EPA 901.1	126,000		U			U			U			U			U			U			U			U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.42	J	0.96	2.28		1.26	1	J	0.76	1.38	J	1.25	1.78	J	1.35	1.23	J	1.7	0.66	UJ	0.77	0.73	J	1.82
Cesium-137 (Cs-137)	EPA 901.1	11	0.48		0.16	0.47		0.19	0.24		0.09	0.45		0.14	0.35		0.14	0.68		0.19	0.45		0.15	0.25		0.16
Lead-212 (Pb-212)	EPA 901.1	661,000	1.31		0.31	1.22		0.33	1.29		0.29	1.13		0.3	0.89		0.24	1.31		0.31	1.21		0.29	1.1		0.25
Potassium-40 (K-40)	EPA 901.1	25.9	19.49		3.85	19.75		4.75	21.79		3.77	17.36		3.86	19.25		3.52	21.36		4.48	20.03		4.17	18.56		3.34
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U			U			U			U			U			U			U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.41		0.35	1.48		0.31	1.4		0.32	1.36		0.31	1.14		0.32	1.28		0.36	1.28		0.32	1.2		0.25
Radium-228 (Ra-228)	EPA 901.1	15.9	1.44		0.45	0.9	J	0.55	1.17		0.53	0.98	J	0.55	1.66		0.47	0.72	J	0.32	0.98		0.46	1.03		0.32
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.43		0.16	0.53		0.17	0.39		0.12	0.3		0.2	0.46		0.15	0.49		0.16	0.49		0.16	0.44		0.11
Thorium-234 (Th-234)	EPA 901.1	47,900	5.25		4.34	1.84	J	2.23	0.44	UJ	4.36	0.55	UJ	2.39	0.14	UJ	4.05	0.62	UJ	2.83	0.97	UJ	2.46	1.24	UJ	3.89
Uranium-235 (U-235)	EPA 901.1	39.2	0.24	R	0.17	0.26	R	0.22	0.18	R	0.17	0.17	R	0.15	0.18	R	0.23	0.15	R	0.15	0.16	R	0.12	0.23	R	0.14
Thorium-228 (Th-228)	HSL-300	14,100	0.84		0.3	0.76		0.28	1.11		0.33	0.78		0.28	0.64		0.23	0.92		0.3	0.56		0.23	0.77		0.27
Thorium-230 (Th-230)	HSL-300	2,090	0.94		0.3	1.04		0.31	1.09		0.33	0.98		0.32	0.67		0.23	0.89		0.28	0.76		0.25	0.68		0.25
Thorium-232 (Th-232)	HSL-300	2,020	0.88		0.28	0.87		0.28	0.87		0.28	1.02		0.32	0.92		0.28	0.69		0.24	0.74		0.25	0.6		0.22
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.06		0.31	1.1		0.29	1.2		0.36	0.94		0.27	0.76		0.23	1.15		0.35	1.09		0.31	0.76		0.24
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.12	J	0.11	0.08	J	0.08	0.18	J	0.14	0.07	J	0.07	0.06	J	0.07	0.05	J	0.1	0.17	J	0.12	0.03	J	0.07
Uranium-238 (U-238)	HSL-300	3,720	1.22		0.34	0.9		0.25	1.25		0.36	1.04		0.28	1.19		0.31	0.84		0.29	0.94		0.28	0.82		0.25

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
pCi/g - picocuries per gram.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).

Table 3: Validated Concrete Analytical Results Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
June 14, 2016, July 10, 2016, and September 15 through 19, 2016

	RST 3 Sample Number		N002-CC003-01			N002-CC006-01			N002-CC006-02			N002-CC007-01			N002-CC011-01			N002-CC013-01			N002-CC016-01			N002-CC001-01			N002-CC002-01			N002-CC002-02		
	Sample Depth (inches)		0-3			0-3			0-3			0-3			0-3			0-3			0-3			0-4			0-4			0-4		
	Sample Matrix		Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete		
	Sample Location		Office Area and Storage 4																					Storage 3 / Wood Work Area								
	Sample Date		6/14/2016			6/14/2016			6/14/2016			6/14/2016			6/14/2016			6/14/2016			6/14/2016			7/10/2016			7/10/2016			7/10/2016		
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																														
Actinium-228 (Ac-228)	EPA 901.1	126,000		U			U			U			U			U			U			U			U			U			U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.15	J	1.6	1.59		1.42	1.67		1.38	0.65	J	1.18	0.16	UJ	1.75	0.82	J	0.86	0.72	J	1.8	0	UJ	0.64	0.81	J	1.12	0.89	J	0.8
Cesium-137 (Cs-137)	EPA 901.1	11		U			U			U			U			U			U			U			U			U			U	
Lead-210 (Pb-210)	EPA 901.1	418	0.99	J	2.31	1.8	J	2.74	0.15	UJ	3.02	0	UJ	0.68	0.07	UJ	2.2	0	UJ	1.43	3.28		2.64	-4.01	UJ	14.32	1.33	J	1.97	0	UJ	1.98
Lead-212 (Pb-212)	EPA 901.1	661,000	0.62		0.18	0.55		0.2	0.63		0.22	0.74		0.2	0.47		0.17	0.34		0.13	0.41		0.17	0.59		0.15	0.49		0.17	0.43		0.15
Potassium-40 (K-40)	EPA 901.1	25.9	7.05		2.4	7.06		2.14	6.95		2.67	8.33		2.28	8.85		2.33	7.56		2.03	11.59		2.94	8.58		1.79	8.57		2.26	8.45		2.39
Proactinium-234 (Pa-234)	EPA 901.1	71,100		U			U			U			U			U			U			U			U			U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.08		0.25	1.12		0.28	1.14		0.29	1.15		0.25	0.52	J	0.18	0.62		0.15	0.74		0.22	0.59		0.15	0.67		0.18	0.76		0.21
Radium-228 (Ra-228)	EPA 901.1	15.9	0.45	J	0.42	0.53	J	0.4	0.51	J	0.38	0.48	J	0.35	0.65		0.26	0.4		0.33	0.27	J	0.36	0.44		0.27	0.38	J	0.25	0.5	J	0.31
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.25		0.12	0.23		0.12	0.39		0.13	0.26		0.1	0.03	UJ	0.13	0.07	J	0.09	0.05	J	0.12	0.17		0.07	0.14		0.11	0.18		0.09
Thorium-234 (Th-234)	EPA 901.1	47,900	0.52	UJ	1.72	1.57	J	1.61	0	UJ	0.93	0.64	UJ	2.1	0.94	J	1.33	1.38	J	1.16	0.88	J	1.69	1.36	J	2.38	1.2	J	1.43	1.06	J	1.41
Uranium-235 (U-235)	EPA 901.1	39.2	0.15	R	0.1	0.09	R	0.14	0.18	R	0.13	0.19	R	0.14	0.05	R	0.12	0.15	R	0.07	0.18	R	0.1	0.03	R	0.11	0.06	R	0.1	0.04	R	0.12
Thorium-228 (Th-228)	HSL-300	14,100	0.59		0.17	0.69		0.18	0.5		0.17	0.51		0.16	0.34		0.16	0.21		0.12	0.32		0.14	0.56		0.21	0.44		0.17	0.3		0.16
Thorium-230 (Th-230)	HSL-300	2,090	0.72		0.18	0.81		0.2	0.85		0.21	0.49		0.16	0.35		0.16	0.35		0.12	0.28		0.14	0.44		0.17	0.37		0.17	0.43		0.18
Thorium-232 (Th-232)	HSL-300	2,020	0.36		0.11	0.36		0.12	0.4		0.13	0.49		0.14	0.3		0.11	0.31		0.11	0.22		0.1	0.27		0.13	0.3		0.14	0.35		0.15
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.69		0.23	0.92		0.28	0.65		0.22	0.46		0.19	0.42		0.18	0.41		0.18	0.4		0.16	0.56		0.24	0.51		0.21	0.49		0.18
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.05	J	0.07	0.08	J	0.08	0.03	J	0.07	0.05	J	0.07	0.06	J	0.08	0.08		0.08	0.05		0.06	0.05	J	0.1	0.01	UJ	0.09	0.01	UJ	0.06
Uranium-238 (U-238)	HSL-300	3,720	0.79		0.25	0.87		0.27	0.92		0.26	0.68		0.22	0.53		0.21	0.43		0.18	0.47		0.17	0.34		0.17	0.47		0.2	0.44		0.16

	RST 3 Sample Number		N002-CC015-0004-01			N002-CC016-0004-01			N002-CC016-0004-02			N002-CC017-0004-01			N002-CC018-0004-01			N002-CC019-0004-01			N004-CC001-0006-01			N004-CC002-0006-01			RB-N-160615			RB-N-160710		
	Sample Depth (inches)		0-4			0-4			0-4			0-4			0-4			0-4			0-6			0-6			Not Applicable			Not Applicable		
	Sample Matrix		Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Concrete			Aqueous			Aqueous		
	Sample Location		Storage 5																		Church Property Utility Building						Rinsate Blank			Rinsate Blank		
	Sample Date		9/18/2016			9/19/2016			9/19/2016			9/19/2016			9/19/2016			9/19/2016			9/15/2016			9/15/2016			6/14/2016			7/10/2016		
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/L)	Qualifier	Total Uncertainty	Value (pCi/L)	Qualifier	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																														
Actinium-228 (Ac-228)	EPA 901.1	126,000		U			U			U			U			U			U			U			U			NA			NA	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.44	UJ	1.35	0.75	J	0.62	0.74	J	0.72	0.54	UJ	1.6	0.64	J	0.52	1.03	J	1.18	0.17	UJ	1.67	-0.32	UJ	2.35	NA		NA	NA		NA
Cesium-137 (Cs-137)	EPA 901.1	11	0.09		0.08	0	UJ	0.02	0	UJ	0.1	0	UJ	0.02	0.05	J	0.11	0	UJ	0.02	0	UJ	0.01	0.01	UJ	0.07	NA		NA	NA		NA
Lead-210 (Pb-210)	EPA 901.1	418																								NA		NA	NA		NA
Lead-212 (Pb-212)	EPA 901.1	661,000	0.29		0.12	0.23		0.12	0.34		0.13	0.35		0.14	0.31		0.12	0.24		0.12	0.5		0.16	0.58		0.19	NA		NA	NA		NA
Potassium-40 (K-40)	EPA 901.1	25.9	5.57		1.46	4.45		3.07	4.49		2.14	3.83		1.74	5.56		1.4	4.9		1.66	7.31		1.8	8.15		2.26	NA		NA	NA		NA
Proactinium-234 (Pa-234)	EPA 901.1	71,100		U			U			U			U			U			U			U			U	NA		NA	NA		NA
Radium-226* (Ra-226)	EPA 901.1	2.48	0.72		0.21	0.58		0.18	0.52		0.16	0.5		0.17	0.62		0.19	0.54		0.19	0.66		0.2	0.81		0.24	NA		NA	NA		NA
Radium-228 (Ra-228)	EPA 901.1	15.9	0.26	J	0.26	0.18	UJ	0.14	0.21	J	0.24	0.37	J	0.27	0.38	J	0.3	0.08	UJ	0.12	0.48	J	0.27	0.82		0.33	NA		NA	NA		NA
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.06	J	0.1	0.07	J	0.12	0.08	J	0.06	0.02	UJ	0.12	0.13	J	0.08	0.12	J	0.11	0.31		0.08	0.24		0.1	NA		NA	NA		NA
Thorium-234 (Th-234)	EPA 901.1	47,900	0.65	UJ	2.78	0	UJ	1.23	0.64	UJ	2.77	1.18	J	1.48	1.1	J	2.56	0.62	J	1.35	1.9	J	2.61	1.02	J	1.24	NA		NA	NA		NA
Uranium-235 (U-235)	EPA 901.1	39.2	0.04	R	0.11	0.1	R	0.08	0.06	R	0.09	0.06	R	0.11	0.07	R	0.08	0.08	R	0.09	0.1	R	0.11	0.12	R	0.07	NA		NA	NA		NA
Thorium-228 (Th-228)	HSL-300	14,100	0.39		0.18	0.26	J	0.16	0.09	J	0.1	0.16	J	0.13	0.34		0.17	0.29	J	0.15	0.36	J	0.21	0.38	J	0.2	0.06	J	0.08	0.04	J	0.06
Thorium-230 (Th-230)	HSL-300	2,090	0.27		0.13	0.34		0.16	0.24		0.14	0.34		0.16	0.22		0.12	0.4		0.18	0.51		0.22	0.5		0.22	0	U	0.04	-0.12	U	0.06
Thorium-232 (Th-232)	HSL-300	2,020	0.14		0.09	0.22		0.12	0.12		0.08	0.13		0.09	0.24		0.13	0.15		0.1	0.31		0.16	0.51		0.22	-0.02	U	0.04	0	U	0.04
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.36	J	0.17	0.36	J	0.15	0.43	J	0.2	0.27	J	0.16	0.42	J	0.19	0.59	J	0.22	0.61		0.2	0.48		0.19	0.01	U	0.04	-0.16	UJ	0.12
Uranium-235/236 (U-235/236)	HSL-300	39.2	0	UJ	0.08	0.04	J	0.07	0.01	UJ	0.08	0.04	J	0.07	0.05	J	0.08	0.08	J	0.08	0.11	J	0.08	0.02	UJ	0.07	0.01	UJ	0.03	0.04	U	0.12
Uranium-238 (U-238)	HSL-300	3,720	0.61	J	0.22	0.23	J	0.12	0.52	J	0.2	0.29	J	0.14	0.32	J	0.16	0.42	J	0.17	0.52		0.18	0.46		0.18	0.04	J	0.03	0	UJ	0.1
Radium-226 (Ra-226)	EPA 903.1	NS	NA			NA			NA			NA			NA			NA			NA			NA			-0.09	U	0.42	-0.13	U	0.3
Radium-228 (Ra-228)	EPA 904.0	NS	NA			NA			NA			NA			NA			NA			NA			NA			-0.03	UJ	0.32	0.94	J	0.41

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
NA - Not analyzed, NS - Not specified.
pCi/g - picocuries per gram, pCi/L - picocuries per liter.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g; there are no EPA SSALs for aqueous/rinsate samples.
Radium-226* (21-day ingrowth).
Background samples.

Table 4: Clean Fill Analytical Results Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
July 11 and 12, 2016

	RST 3 Sample Number		N002-BKF001-01			N002-BKF002-01		
	Sample Depth (inches)		Not Applicable			Not Applicable		
	Sample Matrix		Pea Gravel			Gravel		
	Sample Date		7/11/2016			7/12/2016		
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**						
Actinium-228 (Ac-228)	EPA 901.1	126,000		U			U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.3	UJ	0.84	0	UJ	0.22
Lead-210 (Pb-210)	EPA 901.1	418	1.09	J	1.32	0.41	UJ	1.73
Lead-212 (Pb-212)	EPA 901.1	661,000	0.08	J	0.08	0.12	J	0.12
Potassium-40 (K-40)	EPA 901.1	25.9	0.61	J	0.6	1.5		1.24
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	0.41		0.12	0.69		0.16
Radium-228 (Ra-228)	EPA 901.1	15.9	0.06	U	0.08	0.2		0.13
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.03	J	0.03	0.03	J	0.03
Thorium-234 (Th-234)	EPA 901.1	47,900	0.33	UJ	0.6	0.36	UJ	0.62
Uranium-235 (U-235)	EPA 901.1	39.2	0.12	R	0.07	0.11	R	0.1
Thorium-228 (Th-228)	HSL-300	14,100	0.1	J	0.09	0.25		0.14
Thorium-230 (Th-230)	HSL-300	2,090	0.3		0.14	0.71		0.22
Thorium-232 (Th-232)	HSL-300	2,020	0.09		0.08	0.31		0.13
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.51		0.2	0.69		0.25
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.02	UJ	0.08	0.08	J	0.09
Uranium-238 (U-238)	HSL-300	3,720	0.4		0.17	0.79		0.26

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
pCi/g - picocuries per gram.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).

Table 5: Disposal Soil Analytical Results Summary Table - TCLP
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
December 5, 2016

RST 3 Sample Number	EPA TCLP MCC[1]	N002-WD-A5-01-01	N002-WD-A5-01-02	N002-WD-A5-02-01	N002-WD-A5-03-01	N002-WD-A5-04-01	N002-WD-A5-05-01	N002-WD-A5-06-01	N002-WD-OF-01-01	N002-WD-OF-02-01
Sampling Date		12/5/2016	12/5/2016	12/5/2016	12/5/2016	12/5/2016	12/5/2016	12/5/2016	12/5/2016	12/5/2016
Sample Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Location		**Area 5**							**Office Area**	
Sample Depth (inches)		0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6	0-6
TCLP VOC										
Vinyl Chloride	200	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
1,1-Dichloroethene	700	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
2-Butanone (MEK)	200,000	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
Carbon Tetrachloride	500	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	6,000	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Benzene	500	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
1,2-Dichloroethane	500	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
Trichloroethene	500	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Tetrachloroethene	700	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Chlorobenzene	100,000	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
TCLP SVOC										
Pyridine	5,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	7,500	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Methylphenol	200,000	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
3 & 4-Methylphenol	200,000	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
Hexachloroethane	3,000	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Nitrobenzene	2,000	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U
Hexachlorobutadiene	500	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
2,4,6-Trichlorophenol	2,000	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U
2,4,5-Trichlorophenol	400,000	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
2,4-Dinitrotoluene	130	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	130	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Pentachlorophenol	100,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TCLP Pesticide										
Gamma-BHC	400	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U	0.055 U
Heptachlor	8	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U
Heptachlor Epoxide	8	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
Endrin	20	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U
Methoxychlor	10,000	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Toxaphene	500	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlordane	30	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
TCLP Herbicide										
2,4-D	10,000	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
2,4,5-TP (Silvex)	1,000	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
TCLP Metal										
Arsenic	5,000	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Barium	100,000	**559**	**544**	**565**	**981**	**517**	**564**	**560**	**1,070**	**1,040**
Cadmium	1,000	5 U	5 U	5 U	**9.15 J**	5 U	5 U	5 U	5 U	5 U
Chromium	5,000	11 U	**14.3 J**	11 U	11 U	11 U	11 U	**45.7 J**	**11.3 J**	11 U
Lead	5,000	15 U	15 U	15 U	15 U	15 U	15 U	**64**	15 U	15 U
Mercury	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Selenium	1,000	48 U	48 U	48 U	48 U	48 U	48 U	48 U	48 U	48 U
Silver	5,000	12.5 U	12.5 U	12.5 U	12.5 U	12.5 U	12.5 U	12.5 U	12.5 U	12.5 U

Notes:
RST 3: Removal Support Team 3.
U: Not detected, J: Estimated value.
TCLP: Toxicity Characteristic Leaching Procedure.
VOC: Volatile Organic Compound.
SVOC: Semivolatile Organic Compound.
[1]U.S. Environmental Protection Agency (EPA) Toxicity Characteristic Leaching Procedure (TCLP) Maximum Concentration of Contaminants (MCCs).
All analytical results and EPA TCLP MCCs reported in micrograms per liter (µg/L).
Bold result values are detections.

Table 6: Background (Church Property) Soil Analytical Results Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
September 15, 2016

	RST 3 Sample Number		N004-S001-0511-01					N004-S001-1117-01					N004-S001-1723-01					N004-S001-2329-01				
	Sample Depth (inches)		5-11					11-17					17-23					23-29				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		9/15/2016					9/15/2016					9/15/2016					9/15/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		U			U		U			U		0.61	0.04		U		0.67	0.03
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	-0.04	UJ	1.47	U		0.24	UJ	1.55	0.24	0.08	2.49		2.12	0.62	0.14	0	UJ	1.21	0.76	0.13
Cesium-137 (Cs-137)	EPA 901.1	11	0.03	J	0.08	U		0.04	J	0.08	U		0.08	J	0.1	U		0.02	UJ	0.14	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	0.34		0.14	0.20	0.02	0.54		0.18	0.19	0.02	1.07		0.28	0.56	0.03	1.01		0.24	0.61	0.03
Potassium-40 (K-40)	EPA 901.1	25.9	7.28		2.12	5.99	0.28	8.37		1.89	5.65	0.27	18.4		4	10.94	0.42	17.96		3.46	12.52	0.46
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	0.3	J	0.16	0.38	0.19	0.59		0.2	0.26	0.16	1.04		0.31	0.88	0.20	1.33		0.31	1.01	0.20
Radium-228 (Ra-228)	EPA 901.1	15.9	0.35	J	0.27	U		0.58	J	0.29	U		1.79		0.58	U		1.42		0.49	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.02	UJ	0.14	0.08	0.01	0.24		0.09	0.08	0.01	0.47		0.15	0.18	0.02	0.47		0.15	0.23	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	0	UJ	0.74	U		0.33	UJ	2.89	U		0.89	UJ	1.64	U		0	UJ	1.52	0.90	0.28
Uranium-235 (U-235)	EPA 901.1	39.2	0.06	R	0.06	U		0.01	R	0.12	U		0.14	R	0.14	U		0.15	R	0.19	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.13	J	0.14	U		0.16	UJ	0.34	U		0.73	J	0.5	U		0.83		0.33	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.09	U	0.16	U		0.14	UJ	0.24	U		0.39	J	0.34	U		0.62		0.26	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.14	J	0.13	U		0.44	J	0.23	U		0.54	J	0.36	U		0.48		0.23	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.2		0.11	U		0.36		0.15	U		0.63	J	0.4	U		0.76		0.24	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.05	J	0.06	U		-0.01	UJ	0.06	U		0.18	J	0.21	U		0.07	J	0.07	U	
Uranium-238 (U-238)	HSL-300	3,720	0.2		0.1	U		0.29		0.13	U		0.88	J	0.43	U		0.77		0.24	U	

	RST 3 Sample Number		N004-S002-0612-01					N004-S002-1218-01					N004-S002-1824-01					N004-S002-2430-01				
	Sample Depth (inches)		6-12					12-18					18-24					24-30				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		9/15/2016					9/15/2016					9/15/2016					9/15/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		NA			U		NA			U		NA			U		NA	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.83	J	1.16	NA		0	UJ	0.8	NA		2.1		1.75	NA		0.59	UJ	2.47	NA	
Cesium-137 (Cs-137)	EPA 901.1	11	0	UJ	0.02	NA		0.03	J	0.08	NA		0.07	J	0.12	NA		0	UJ	0.02	NA	
Lead-212 (Pb-212)	EPA 901.1	661,000	0.58		0.21	NA		0.61		0.16	NA		1.02		0.26	NA		1.61		0.34	NA	
Potassium-40 (K-40)	EPA 901.1	25.9	9.84		2.75	NA		12.9		2.58	NA		15.49		3.44	NA		24.88		4.64	NA	
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		NA			U		NA			U		NA			U		NA	
Radium-226* (Ra-226)	EPA 901.1	2.48	0.23	J	0.16	NA		0.7		0.24	NA		1.16		0.31	NA		1.63		0.32	NA	
Radium-228 (Ra-228)	EPA 901.1	15.9	0.35	J	0.23	NA		0.49	J	0.4	NA		0.89		0.4	NA		1.93		0.51	NA	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.12	J	0.09	NA		0.28		0.08	NA		0.31		0.16	NA		0.64		0.18	NA	
Thorium-234 (Th-234)	EPA 901.1	47,900	0.37	UJ	1.56	NA		0	UJ	1.47	NA		0.14	UJ	2.11	NA		2.01	UJ	5.12	NA	
Uranium-235 (U-235)	EPA 901.1	39.2	0.04	R	0.1	NA		0.07	R	0.11	NA		0.14	R	0.11	NA		0.29	R	0.21	NA	
Thorium-228 (Th-228)	HSL-300	14,100	0.34		0.19	NA		0.6	J	0.43	NA		0.92	J	0.62	NA		1.15	J	0.67	NA	
Thorium-230 (Th-230)	HSL-300	2,090	0.29		0.16	NA		0.73	J	0.46	NA		0.69	J	0.48	NA		1.3	J	0.64	NA	
Thorium-232 (Th-232)	HSL-300	2,020	0.16		0.11	NA		0.55	J	0.35	NA		0.6	J	0.41	NA		1.44	J	0.68	NA	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.14	J	0.12	NA		0.35		0.16	NA		0.65		0.21	NA		1.03		0.32	NA	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.02	UJ	0.09	NA		0	UJ	0.08	NA		0.09	J	0.08	NA		0.08	J	0.09	NA	
Uranium-238 (U-238)	HSL-300	3,720	0.35		0.17	NA		0.46		0.19	NA		0.62		0.2	NA		1.06		0.32	NA	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
NA - Not analyzed.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Background sample.

Table 7: Storage-5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
September 18 and 19, 2016

	RST 3 Sample Number		N002-S015-0612-01					N002-S015-1218-01					N002-S015-1824-01					N002-S015-2430-01					N002-S016-0410-01				
	Sample Depth (inches)		6-12					12-18					18-24					24-30					4-10				
	Sample Matrix		Soil					Soil					Soil					Soil					Soil				
	Sample Date		9/18/2016					9/18/2016					9/18/2016					9/18/2016					9/19/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																									
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		U			U		U			U		16.22	0.21		U		314.40	3.04		U		U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.02	UJ	1.46	U		0	UJ	0.5	0.33	0.09	4.64		1.92	18.07	0.60	25.37		6.26	334.76	6.11	0	UJ	0.36	U	
Cesium-137 (Cs-137)	EPA 901.1	11	0	U	0.02	U		0	U	0.07	U		0.08	J	0.14	U		0.3		0.2	U		0	U	0.03	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	0.38		0.15	0.17	0.01	0.57		0.18	0.29	0.02	4.72		0.75	8.01	0.26	18.31		2.59	150.99	4.28	0	U	0.08	0.00	0.01
Potassium-40 (K-40)	EPA 901.1	25.9	4.57		1.38	3.78	0.21	11.42		2.83	5.76	0.27	14.26		2.91	7.18	0.38	9.16		4.78	U		0.45	J	0.56	U	
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		U			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	0.88		0.2	0.63	0.17	0.78		0.22	0.93	0.18	**5.04**		0.78	**7.86**	0.98	**15.48**		2.22	**164.76**	8.60	0.28	J	0.16	0.46	0.14
Radium-228 (Ra-228)	EPA 901.1	15.9	0.21	J	0.32	U		0.47	J	0.28	U		5.16		0.96	U		**18.58**		2.82	U		0	U	0.08	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.12		0.06	0.06	0.01	0.28		0.13	0.09	0.01	1.81		0.34	5.56	0.14	5.69		0.9	108.54	1.96	0.02	U	0.1	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	1.17	UJ	3.46	0.48	0.17	0.05	UJ	3.71	U		5.76	J	7.01	U		14.02		6.32	111.85	5.85	0	UJ	0.87	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.04	R	0.12	U		0.09	R	0.11	U		0.76	R	0.29	U		2.27	R	0.55	U		0.1	R	0.09	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.34	J	0.16	U		0.63		0.24	U		3.13		0.66	9.71	1.85	8.94		1.61	164.40	17.86	0.03	UJ	0.08	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.34		0.14	U		0.65		0.23	U		3.55		0.73	U		8.15		1.47	U		0.23		0.13	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.21		0.11	U		0.46		0.19	U		3.09		0.65	U		8.87		1.59	U		0	U	0.06	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.52	J	0.18	U		0.69	J	0.23	U		3.73	J	0.76	U		13.6	J	2.08	U		0.26		0.14	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.05	J	0.07	U		0.05	J	0.08	U		0.22	J	0.14	U		0.79	J	0.22	U		0.04	J	0.07	U	
Uranium-238 (U-238)	HSL-300	3,720	0.56	J	0.19	U		0.64	J	0.22	U		4.13	J	0.81	U		14.2	J	2.18	U		0.26		0.13	U	

	RST 3 Sample Number		N002-SS016-0410-02					N002-S016-1012-01					N002-S017-0408-01					N002-S018-0410-01					N002-S018-1016-01				
	Sample Depth (inches)		4-10					10-12					4-8					4-10					10-16				
	Sample Matrix		Soil					Soil					Soil					Soil					Soil				
	Sample Date		9/19/2016					9/19/2016					9/19/2016					9/19/2016					9/19/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																									
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		U			U		4.57	0.09		U		U			U		U			U		0.93	0.04
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	-0.02	UJ	1.37	U		9.05		2.24	5.01	0.34	0.43	J	0.59	U		0.43	J	0.48	U		4.2		2.16	0.91	0.16
Cesium-137 (Cs-137)	EPA 901.1	11	0.03	U	0.1	U		0	U	0.06	U		0.01	U	0.07	U		0.03	J	0.07	U		0.04	U	0.15	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	0	U	0.05	U		5.72		0.88	4.01	0.12	0.05	U	0.16	U		0.08	J	0.07	U		2.19		0.42	0.86	0.04
Potassium-40 (K-40)	EPA 901.1	25.9	0.57	J	1.01	0.03	0.06	13.41		2.79	6.73	0.34	0.88	J	0.9	0.51	0.10	1.02		0.63	0.27	0.09	14.82		3.33	11.66	0.48
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		U			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	0.59	J	0.27	0.65	0.16	**2.56**		0.48	**4.25**	0.51	0.52	J	0.17	0.57	0.15	0.35	J	0.14	0.47	0.15	1.52		0.32	1.55	0.29
Radium-228 (Ra-228)	EPA 901.1	15.9	0.25	J	0.21	U		5.81		1.12	U		0	U	0.18	U		0.01	U	0.29	U		2.03		0.58	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0	U	0.04	U		2		0.36	1.57	0.06	0.07	J	0.06	U		0.04	J	0.04	U		0.84		0.2	0.32	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	0.85	J	1.6	0.09	0.15	4.5	J	6.16	U		0	UJ	0.94	0.06	0.13	0.34	UJ	2.28	0.03	0.14	2.05	J	2.23	1.32	0.20
Uranium-235 (U-235)	EPA 901.1	39.2	0.07	R	0.1	U		0.22	R	0.24	U		0.11	R	0.08	U		0.02	R	0.09	U		0.23	R	0.16	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.02	UJ	0.26	U		3.47		0.77	U		0.11	J	0.12	U		0.08	J	0.1	U		1.01		0.36	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.35	J	0.3	U		2.05		0.52	U		0.21	J	0.16	U		-0.02	UJ	0.11	U		0.96		0.32	U	
Thorium-232 (Th-232)	HSL-300	2,020	0	UJ	0.19	U		3.75		0.81	U		0.03	J	0.06	U		-0.01	U	0.07	U		1.05		0.34	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.39		0.16	U		2.27		0.49	U		0.34		0.14	U		0.33		0.17	U		0.95		0.22	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.04	J	0.07	U		0.05	J	0.07	U		0.04	J	0.06	U		0.04	J	0.07	U		0.08	J	0.06	U	
Uranium-238 (U-238)	HSL-300	3,720	0.38		0.16	U		2.35		0.51	U		0.36		0.15	U		0.23		0.12	U		1.12		0.24	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
NA - Not analyzed.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 7: Storage-5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
September 18 and 19, 2016

	RST 3 Sample Number		N002-S018-1622-01					N002-S018-2228-01					N002-S019-0409-01					N002-S019-0409-02				
	Sample Depth (inches)		16-22					22-28					4-9					4-9				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		9/19/2016					9/19/2016					9/19/2016					9/19/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		1.22	0.06		U		1.05	0.05		U		NA			U		NA	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.17	J	1.98	1.41	0.22	4.51		1.73	1.50	0.24	0.51	J	0.51	NA		0.43	UJ	0.48	NA	
Cesium-137 (Cs-137)	EPA 901.1	11	0.08	J	0.13	U		0	U	0.04	U		0	UJ	0.02	NA		0	UJ	0.02	NA	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.28		0.29	1.09	0.05	1.6		0.36	1.16	0.06	0	U	0.14	NA		0.08	J	0.08	NA	
Potassium-40 (K-40)	EPA 901.1	25.9	**30.48**		5.23	17.96	0.70	**28.55**		5.58	20.00	0.74	0.87	J	0.98	NA		0	UJ	0.75	NA	
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		NA			U		NA	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.51		0.35	2.05	0.34	1.27		0.37	1.81	0.38	0.42		0.17	NA		0.61		0.17	NA	
Radium-228 (Ra-228)	EPA 901.1	15.9	1.98		0.49	U		1.97		0.53	U		0.17	J	0.2	NA		0	UJ	0.26	NA	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.66		0.17	0.37	0.03	0.71		0.2	0.35	0.03	0	UJ	0.03	NA		0.04	J	0.06	NA	
Thorium-234 (Th-234)	EPA 901.1	47,900	0	UJ	2.39	1.55	0.25	4.3		2.22	U		1.49		1.05	NA		1.14	J	2.22	NA	
Uranium-235 (U-235)	EPA 901.1	39.2	0.27	R	0.18	U		0.17	R	0.21	U		0	R	0.1	NA		0.03	R	0.09	NA	
Thorium-228 (Th-228)	HSL-300	14,100	0.93		0.34	U		1.17		0.37	U		0	UJ	0.09	NA		0.02	UJ	0.09	NA	
Thorium-230 (Th-230)	HSL-300	2,090	0.84		0.31	U		0.85		0.29	U		0.32		0.16	NA		0.36		0.19	NA	
Thorium-232 (Th-232)	HSL-300	2,020	0.98		0.33	U		0.87		0.29	U		0.02	U	0.07	NA		-0.01	U	0.07	NA	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.09		0.3	U		0.88		0.26	U		0.25		0.12	NA		0.41		0.18	NA	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.02	UJ	0.07	U		0.05	J	0.07	U		0.03	J	0.06	NA		0.02	UJ	0.08	NA	
Uranium-238 (U-238)	HSL-300	3,720	0.96		0.28	U		1.14		0.3	U		0.22		0.11	NA		0.53		0.21	NA	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated result, R - Rejected result.
NA - Not analyzed.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 8A: Office Area Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
August 4 and 16, 2016 and September 9 and 20, 2016

	RST 3 Sample Number	N002-OF-AI09-01-01					N002-OF-AE09-01-01					N002-OF-AM10-01-01					N002-OF-AL03-01-01					N002-OF-AP03-01-01				
	Sample Depth (inches)	0-4					0-4					0-4					0-4					0-4				
	Sample Matrix	Soil					Soil					Soil					Soil					Soil				
	Sample Date	8/4/2016					8/16/2016					8/16/2016					9/9/2016					9/9/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																								
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		0.91	0.04	U			0.76	0.05	U			0.90	0.05	U			0.72	0.03	U			0.85	0.05
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.76	J	1.41	0.99	0.19	3.15		1.45	0.73	0.20	0.72	UJ	2.39	1.23	0.22	1.74	J	1.53	0.79	0.16	2.12	J	1.65	0.85	0.18
Cesium-137 (Cs-137)	EPA 901.1	11	0.07	J	0.07	U		0.01	UJ	0.18	0.04	0.01	0	UJ	0.12	U		0	UJ	0.07	U		0	UJ	0.12	0.02	0.01
Lead-212 (Pb-212)	EPA 901.1	661,000	1.56		0.33	0.80	0.04	1.12		0.31	0.81	0.04	1.42		0.34	0.95	0.04	1.58		0.35	0.67	0.03	1.15		0.26	0.75	0.04
Potassium-40 (K-40)	EPA 901.1	25.9	24.69		4.36	15.44	0.60	19.85		4.22	12.84	0.55	**29.44**		4.93	19.34	0.71	24.54		4.75	14.15	0.50	19.56		3.48	13.08	0.54
Protactinium-234 (Pa-234)	EPA 901.1	71,100	U			U		U			U		U			U		U			U		U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.42		0.36	1.35	0.35	1.57		0.37	0.98	0.33	0.78		0.28	1.61	0.34	1.41		0.3	1.29	0.27	1.45		0.27	1.57	0.31
Radium-228 (Ra-228)	EPA 901.1	15.9	1.45		0.42	U		1.25		0.54	U		1.33		0.46	U		1.97		0.6	U		1.42		0.4	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.55		0.16	0.26	0.02	0.38		0.15	0.26	0.02	0.4		0.18	0.29	0.02	0.5		0.16	0.23	0.02	0.51		0.12	0.26	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	1.44	UJ	2.67	1.45	0.20	0.3	UJ	2.63	0.86	0.36	0.58	UJ	4.98	U		2.65	J	2.12	U		3	J	2.41	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.84	R	1.51	U		0.62	R	1.41	U		0	R	0.52	U		0.95	R	1.48	U		0.29	R	0.39	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.45		0.55	U		1.08		0.36	U		1.18		0.46	U		1.51		0.51	U		1.04		0.41	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.55		0.29	U		0.79		0.28	U		0.82		0.36	U		1		0.38	U		0.87		0.35	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.79		0.35	U		0.7		0.26	U		1.24		0.44	U		1.03		0.38	U		0.62		0.29	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.79	J	0.24	U		0.93	J	0.28	U		0.8	J	0.25	U		0.97	J	0.27	U		0.68	J	0.24	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.03	J	0.06	U		0.1	J	0.09	U		0.06	J	0.08	U		0.03	J	0.06	U		0.11	J	0.1	U	
Uranium-238 (U-238)	HSL-300	3,720	0.61	J	0.2	U		1.16	J	0.32	U		0.94	J	0.27	U		0.84	J	0.24	U		0.97	J	0.28	U	

	RST 3 Sample Number	N002-OF-AB04-01-01					N002-OF-AD09-01-01					N002-OF-AH03-01-01					N002-OF-AH13-01-01					N002-OF-AI15-01-01				
	Sample Depth (inches)	0-4					0-4					0-4					0-4					0-4				
	Sample Matrix	Soil					Soil					Soil					Soil					Soil				
	Sample Date	9/20/2016					9/20/2016					9/20/2016					9/20/2016					9/20/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																								
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		1.07	0.05	U			1.02	0.05	U			NA		U			0.82	0.04	U			U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.53		1.15	1.52	0.23	2.1	J	1.6	1.18	0.21	0.55	UJ	2.56	NA		0.68	UJ	0.6	0.53	0.18	0.22	UJ	1.08	U	
Cesium-137 (Cs-137)	EPA 901.1	11	0	U	0.02	U		0	U	0.04	U		0	U	0.02	NA		0.02	U	0.14	0.08	0.01	0.29		0.09	0.21	0.02
Lead-212 (Pb-212)	EPA 901.1	661,000	1.34		0.31	0.87	0.04	1.41		0.32	1.03	0.04	1.53		0.35	NA		1.04		0.26	0.75	0.04	0.3		0.12	0.38	0.02
Potassium-40 (K-40)	EPA 901.1	25.9	26.23		4.98	18.57	0.68	17.93		3.42	13.79	0.55	23.93		4.47	NA		20.48		3.92	12.24	0.50	11.88		2.26	9.32	0.39
Protactinium-234 (Pa-234)	EPA 901.1	71,100	U			U		U			U		U			NA		U			U		U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.67		0.42	1.91	0.38	1.42		0.32	2.11	0.38	1.49		0.35	NA		**2.9**		0.53	**4.02**	0.49	0.56	J	0.12	0.85	0.22
Radium-228 (Ra-228)	EPA 901.1	15.9	1.6		0.51	U		1.18		0.42	U		1.38		0.54	NA		1.09		0.58	U		0.45		0.24	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.45		0.16	0.31	0.02	0.6		0.16	0.30	0.02	0.54		0.16	NA		0.48		0.17	0.27	0.02	0.03	U	0.1	0.15	0.01
Thorium-234 (Th-234)	EPA 901.1	47,900	4.58		1.85	1.15	0.21	1.59	UJ	4.28	1.97	0.24	0.42	UJ	5.76	NA		1.61	UJ	5.57	1.41	0.22	1.78	J	1.97	0.41	0.24
Uranium-235 (U-235)	EPA 901.1	39.2	0.26	R	0.24	U		0.21	R	0.15	U		0.21	R	0.12	NA		0.34	R	0.16	U		0	R	0.06	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.18		0.37	U		1.15		0.34	U		1.16		0.33	NA		1.1		0.32	3.25	0.78	0.27	J	0.14	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.97		0.33	U		1.14		0.33	U		0.89		0.27	NA		2.15		0.5	U		0.16	J	0.12	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.98		0.32	U		0.85		0.27	U		0.82		0.25	NA		0.72		0.24	U		0.2		0.11	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.9	J	0.26	U		0.95	J	0.29	U		0.9	J	0.29	NA		2.4	J	0.55	U		0.29	J	0.14	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.08	J	0.08	U		0.07	J	0.08	U		0.09	J	0.09	NA		0.24	J	0.15	U		0.02	UJ	0.07	U	
Uranium-238 (U-238)	HSL-300	3,720	0.94	J	0.26	U		0.8	J	0.26	U		1.14	J	0.33	NA		2.31	J	0.53	U		0.25	J	0.13	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected, J - Estimated value, R - Rejected result.

NA - Not analyzed.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 8A: Office Area Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
August 4 and 16, 2016 and September 9 and 20, 2016

	RST 3 Sample Number		N002-OF-AL12-01-01					N002-OF-AP08-01-01					N002-OF-AQ07-01-01				
	Sample Depth (inches)		0-4					0-4					0-4				
	Sample Matrix		Soil					Soil					Soil				
	Sample Date		9/20/2016					9/20/2016					9/20/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**															
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		NA			U		1.26	0.05		U		1.02	0.05
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	3.15		1.8	NA		1.63	J	1.86	1.23	0.21	2.03		1.73	1.49	0.22
Cesium-137 (Cs-137)	EPA 901.1	11	0	U	0.05	NA		0	U	0.01	U		0.01	U	0.16	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.46		0.33	NA		1.36		0.29	1.21	0.06	1.26		0.32	0.96	0.05
Potassium-40 (K-40)	EPA 901.1	25.9	27.28		4.82	NA		19.19		3.88	13.59	0.55	24.71		4.58	15.45	0.59
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		NA			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.89		0.4	NA		1.75		0.32	1.97	0.38	**3.34**		0.58	**7.41**	0.59
Radium-228 (Ra-228)	EPA 901.1	15.9	0.91		0.61	NA		1.46		0.58	U		1.93		0.57	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.54		0.18	NA		0.44		0.13	0.44	0.03	0.55		0.19	0.33	0.03
Thorium-234 (Th-234)	EPA 901.1	47,900	2.58	J	5.58	NA		4.6		3.52	1.63	0.21	0.66	UJ	6.04	3.79	0.36
Uranium-235 (U-235)	EPA 901.1	39.2	0.1	R	0.16	NA		0.22	R	0.14	U		0.61	R	0.23	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.06		0.32	NA		0.92		0.3	U		0.97		0.3	U	
Thorium-230 (Th-230)	HSL-300	2,090	1.14		0.34	NA		1.05		0.31	U		1.84		0.44	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.88		0.28	NA		0.84		0.27	U		0.84		0.26	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.8	J	0.42	NA		1.03	J	0.32	U		2	J	0.47	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.18	J	0.12	NA		0.14	J	0.12	U		0.08	J	0.08	U	
Uranium-238 (U-238)	HSL-300	3,720	1.53	J	0.37	NA		1.09	J	0.32	U		2.08	J	0.48	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected, J - Estimated value, R - Rejected result.
NA - Not analyzed.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 8B: Office Area Post-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
September 22 and 23, 2016 and October 5, 2016

	RST 3 Sample Number		N002-OF-AB11-01-01					N002-OF-AD13-01-01					N002-OF-AF06-01-01					N002-OF-AH02-01-01				
	Sample Depth (inches)		0-4					0-4					0-4					0-4				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		9/22/2016					9/22/2016					9/23/2016					9/22/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		1.24	0.05		U		0.90	0.04		U		0.69	0.04		U		U	
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.55	UJ	0.66	0.97	0.18	0.56	UJ	0.43	1.06	0.16	1.47	J	2.54	0.51	0.17	1.51	J	1.55	0.62	0.12
Cesium-137 (Cs-137)	EPA 901.1	11	0.03	UJ	0.08	U		0.05	J	0.12	U		0.05	J	0.14	U		0.03	UJ	0.14	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.78		0.37	1.16	0.05	1.17		0.27	0.83	0.04	1.4		0.31	0.57	0.03	1.05		0.28	0.51	0.03
Potassium-40 (K-40)	EPA 901.1	25.9	23.56		4.67	17.64	0.63	25.89		4.32	18.93	0.66	18.53		3.7	10.82	0.42	19.05		4.22	9.28	0.41
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.75		0.37	1.81	0.31	1.35		0.34	1.53	0.27	1.37		0.3	1.58	0.28	1.48		0.34	1.41	0.28
Radium-228 (Ra-228)	EPA 901.1	15.9	1.53		0.49	U		2.08		0.46	U		1.45		0.54	U		1.13		0.46	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.48		0.18	0.43	0.03	0.52		0.12	0.27	0.02	0.5		0.14	0.21	0.02	0.28		0.15	0.16	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	3.78		1.94	U		1.28	UJ	1.96	1.52	0.20	3.68	J	2.16	1.22	0.15	2.09	J	1.93	1.10	0.29
Uranium-235 (U-235)	EPA 901.1	39.2	0.45	R	1.66	U		1.51	R	1.34	U		0	R	0.43	U		0.92	R	1.07	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.31		0.5	U		1.11		0.46	U		0.91		0.35	U		0.4	J	0.21	U	
Thorium-230 (Th-230)	HSL-300	2,090	1.42		0.51	U		0.87		0.38	U		0.66		0.3	U		0.4		0.23	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.84		0.37	U		0.97		0.39	U		0.89		0.32	U		0.53		0.23	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.11	J	0.31	U		1.11	J	0.3	U		0.79	J	0.25	U		0.96	J	0.3	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.07	J	0.08	U		0.05	J	0.07	U		0.05	J	0.07	U		0.04	J	0.08	U	
Uranium-238 (U-238)	HSL-300	3,720	0.98	J	0.28	U		1.01	J	0.28	U		0.86	J	0.25	U		1.04	J	0.31	U	

	RST 3 Sample Number		N002-OF-AJ11-01-01					N002-OF-AK06-01-01					N002-OF-AN06-01-01					N002-OF-AP11-01-01				
	Sample Depth (inches)		0-4					0-4					0-4					0-4				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		9/23/2016					9/23/2016					9/23/2016					9/23/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000		U		0.84	0.04		U		0.78	0.04		U		0.81	0.04		U		0.89	0.05
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	3.07		1.83	0.80	0.20	1.34	J	0.97	0.89	0.17	0.2	UJ	2.46	0.69	0.14	0.83	UJ	2.71	0.79	0.22
Cesium-137 (Cs-137)	EPA 901.1	11	0.08	J	0.12	U		0	UJ	0.07	0.05	0.01	0	UJ	0.14	U		0	UJ	0.08	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.31		0.3	0.77	0.04	0.86		0.24	0.74	0.04	1.36		0.32	0.82	0.04	1.33		0.31	0.84	0.05
Potassium-40 (K-40)	EPA 901.1	25.9	18.84		3.95	13.31	0.55	20.69		3.67	14.30	0.56	21.12		4.6	17.08	0.60	23.45		4.52	17.31	0.66
Protactinium-234 (Pa-234)	EPA 901.1	71,100		U		U			U		U			U		U			U		U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.5		0.3	1.76	0.32	1.7		0.34	1.61	0.34	1.36		0.37	1.12	0.23	2.06		0.45	**4.74**	0.57
Radium-228 (Ra-228)	EPA 901.1	15.9	1.73		0.56	U		1.14		0.61	U		1.35		0.51	U		1.37		0.49	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.41		0.13	0.25	0.02	0.48		0.14	0.28	0.02	0.37		0.18	0.26	0.02	0.53		0.17	0.27	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	3.43		1.79	1.23	0.39	0	UJ	1.57	1.10	0.18	0	UJ	1.59	1.20	0.44	1.91	J	2.18	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.77	R	1.04	U		0.35	R	1.57	U		1.04	R	1.08	U		0.7	R	1.21	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.09		0.38	U		0.93		0.39	U		0.8		0.31	U		1.24		0.52	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.58		0.26	U		0.92		0.35	U		0.84		0.3	U		1.04		0.46	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.69		0.27	U		1.01		0.37	U		0.58		0.24	U		1.16		0.48	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.97	J	0.27	U		0.9	J	0.3	U		0.88	J	0.26	U		1.39	J	0.38	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.07	J	0.07	U		0.12	J	0.11	U		0	UJ	0.07	U		0.11	J	0.1	U	
Uranium-238 (U-238)	HSL-300	3,720	0.99	J	0.27	U		0.94	J	0.3	U		0.84	J	0.25	U		1.32	J	0.36	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected, J - Estimated value, R - Rejected result.

NA - Not analyzed.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 8B: Office Area Post-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
September 22 and 23, 2016 and October 5, 2016

	RST 3 Sample Number	N002-OF-AB05-01-01					N002-OF-AB05-01-02					N002-OF-AD02-01-01					N002-OF-AH13-02-01				
	Sample Depth (inches)	0-4					0-4					0-4					0-4				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	9/22/2016					9/22/2016					9/23/2016					9/23/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		0.78	0.05	U			0.88	0.05	U			0.81	0.04	U			1.43	0.07
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.24	1.58	0.74	0.17	0.43	UJ	1.97	0.95	0.18	2.14	J	1.97	0.63	0.14	2.2	J	1.95	1.41	0.27
Cesium-137 (Cs-137)	EPA 901.1	11	0	U 0.02	U		0	U	0.02	U		0.02	U	0.13	U		0.03	U	0.13	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.05	0.27	0.71	0.04	0.84		0.24	0.86	0.04	1.42		0.32	0.69	0.03	1.15		0.29	1.51	0.07
Potassium-40 (K-40)	EPA 901.1	25.9	19.65	3.99	12.87	0.55	19.77		4.03	13.79	0.60	23.93		4.67	15.81	0.58	**27.02**		5.03	19.14	0.70
Protactinium-234 (Pa-234)	EPA 901.1	71,100	U		U		U			U		U			U		U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.28	0.36	2.26	0.30	1.4		0.33	2.03	0.40	1.61		0.33	1.10	0.26	1.44		0.33	1.70	0.33
Radium-228 (Ra-228)	EPA 901.1	15.9	1.19	0.51	U		1.03		0.4	U		1.47		0.5	U		1.66		0.53	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.5	0.16	0.23	0.02	0.63		0.17	0.28	0.02	0.44		0.15	0.26	0.02	0.56		0.21	0.46	0.03
Thorium-234 (Th-234)	EPA 901.1	47,900	2.46	1.58	1.13	0.19	1.85	J	1.54	1.26	0.42	2.93		1.95	1.62	0.18	2.45	J	2.25	1.35	0.37
Uranium-235 (U-235)	EPA 901.1	39.2	0	R 0.28	U		0.94	R	1.11	U		0.92	R	1.02	U		0.02	R	1.53	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.56	J 0.28	U		0.69		0.3	U		0.86		0.39	U		0.98		0.44	2.17	1.82
Thorium-230 (Th-230)	HSL-300	2,090	0.9	0.33	U		0.54		0.26	U		0.88		0.36	U		1.14		0.44	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.6	0.26	U		0.61		0.26	U		0.67		0.3	U		1.05		0.42	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.09	J 0.3	U		1.12	J	0.31	U		0.76	J	0.24	U		0.83	J	0.28	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.14	J 0.1	U		0.04	J	0.07	U		0.02	UJ	0.07	U		0.05	J	0.08	U	
Uranium-238 (U-238)	HSL-300	3,720	0.91	J 0.26	U		1.02	J	0.29	U		0.88	J	0.26	U		1.08	J	0.31	U	

	RST 3 Sample Number	N002-OF-AM13-01-01					N002-OF-AF11-01-01					N002-OF-AJ01-01-01					N002-OF-AN02-01-01				
	Sample Depth (inches)	0-4					0-4					0-4					0-4				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	9/23/2016					9/22/2016					10/5/2016					10/5/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		1.04	0.06	U			1.18	0.06	U			0.81	0.04	U			0.76	0.04
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.85	J 2.23	1.13	0.22	0.29	UJ	3.03	1.34	0.21	3.25		1.21	0.72	0.18	2.44		1.47	0.77	0.15
Cesium-137 (Cs-137)	EPA 901.1	11	0	U 0.1	0.06	0.01	0	U	0.03	U		0		0.03	U		0		0.03	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.14	0.29	1.10	0.05	1.41		0.33	1.08	0.05	1.56		0.32	0.73	0.03	1.57		0.36	0.74	0.04
Potassium-40 (K-40)	EPA 901.1	25.9	20.14	4.36	12.97	0.54	25.37		4.96	16.48	0.58	**27.1**		4.78	16.55	0.58	25.56		4.72	14.83	0.54
Protactinium-234 (Pa-234)	EPA 901.1	71,100	U		U		U			U		U			U		U			U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.52	0.29	1.95	0.35	1.17		0.37	1.65	0.34	1.56		0.36	1.10	0.30	1.58		0.38	1.48	0.18
Radium-228 (Ra-228)	EPA 901.1	15.9	1.34	0.61	U		1.6		0.47	U		1.98		0.49	U		2.16		0.52	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.27	J 0.22	0.32	0.03	0.53		0.17	0.37	0.03	0.5		0.17	0.27	0.02	0.65		0.18	0.24	0.02
Thorium-234 (Th-234)	EPA 901.1	47,900	0.82	UJ 1.4	U		2.11	J	1.43	1.19	0.16	2.16		1.14	U		2.12		5.3	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.7	R 1.23	U		0	R	0.69	U		1.4		0.93	U		0.08		1.98	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.74	0.29	U		0.91		0.4	U		1.19		0.49	U		1.43		0.74	U	
Thorium-230 (Th-230)	HSL-300	2,090	1.08	0.36	U		0.69		0.34	U		0.59		0.33	U		1.63		0.78	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.86	0.3	U		0.74		0.34	U		0.63		0.32	U		0.85		0.52	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.91	J 0.28	U		0.76	J	0.24	U		0.87		0.26	U		1.03		0.3	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.06	J 0.07	U		0.04	J	0.07	U		0.03		0.07	U		0.05		0.07	U	
Uranium-238 (U-238)	HSL-300	3,720	1.04	J 0.29	U		0.92	J	0.27	U		1.09		0.29	U		1.2		0.33	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected, J - Estimated value, R - Rejected result.

NA - Not analyzed.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 9: Area 1 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
October 14, 2016

	RST 3 Sample Number		N002-A01-S001-0006-01					N002-A01-S001-0006-01b					N002-A01-S001-0612-01				
	Sample Depth (inches)		0-6					0-6					6-12				
	Sample Matrix		Soil					Soil					Soil				
	Sample Date		10/14/2016					10/14/2016					10/14/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**															
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			315.990	3.019	U			652.817	6.162	U			64.298	0.675
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	392.160		45.458	329.941	6.024	525.620		70.843	707.889	11.998	20.271		4.736	67.707	1.481
Cesium-137 (Cs-137)	EPA 901.1	11	0.146		0.863	U		0.000		0.318	U		0.012		0.259	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	323.130		38.139	130.660	4.026	484.300		68.188	204.474	6.909	14.671		2.099	34.523	0.987
Potassium-40 (K-40)	EPA 901.1	25.9	20.153		8.143	U		**27.470**		8.218	U		14.031		3.582	13.652	0.683
Protactinium-234M (Pa-234M)	EPA 901.1	71,100	15.581		46.917	127.496	12.089	39.918		125.080	236.936	9.293	17.270		30.069	33.065	4.121
Radium-226* (Ra-226)	EPA 901.1	2.48	**91.805**		10.175	**166.166**	9.791	**125.780**		16.854	**249.357**	13.610	**8.615**		1.307	**39.835**	2.239
Radium-228 (Ra-228)	EPA 901.1	15.9	**341.260**		36.934	U		**498.540**		66.037	U		14.361		2.198	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	112.160		12.337	109.468	1.962	163.630		21.877	224.587	3.943	4.905		0.809	21.688	0.457
Thorium-234 (Th-234)	EPA 901.1	47,900	49.122		10.750	104.285	5.589	68.540		22.278	110.529	7.228	6.004		4.043	26.190	1.473
Uranium-235 (U-235)	EPA 901.1	39.2	5.490		3.628	U		6.935		5.423	U		0.970		3.535	U	
Thorium-228 (Th-228)	HSL-300	14,100	109		19.2	139.524	15.330	120		22.3	218.576	25.960	9.69		2.09	39.442	5.790
Thorium-230 (Th-230)	HSL-300	2,090	40.6		8.17	U		34.7		8.31	U		5.59		1.39	U	
Thorium-232 (Th-232)	HSL-300	2,020	115		20.1	U		110		20.7	U		10.3		2.18	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	117		23.3	U		121		26.2	U		5.61		1.06	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	7.53		2.02	U		7.02		2.13	U		0.253		0.155	U	
Uranium-238 (U-238)	HSL-300	3,720	126		25.0	U		124		27.0	U		6.00		1.12	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 10A: Area 5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
October 12, 2016

	RST 3 Sample Number	N002-A05-S001-0006-01					N002-A05-S001-1218-01					N002-A05-S001-1218-02					N002-A05-S002-0006-01				
	Sample Depth (inches)	0-6					12-18					12-18					0-6				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		70.999	0.772	U			0.835	0.049	U			0.807	0.050	U			178.960	1.752
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.380	2.174	73.486	1.781	3.327		1.470	1.163	0.180	2.733		2.363	1.347	0.232	11.020		3.109	190.803	3.535
Cesium-137 (Cs-137)	EPA 901.1	11	0.187	0.127	U		-0.042		0.197	0.051	0.013	0.042		0.102	0.023	0.010	0.261		0.245	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.954	0.394	26.383	0.796	1.210		0.308	0.773	0.039	1.536		0.330	0.868	0.045	8.536		1.287	76.737	2.152
Potassium-40 (K-40)	EPA 901.1	25.9	12.061	2.869	12.633	0.729	21.567		4.538	14.758	0.575	19.729		3.834	17.035	0.663	16.140		3.501	U	
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	2.704	19.384	U		0.000		5.433	U		0.137		12.451	U		5.006		20.124	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	**2.699**	0.553	**31.915**	3.011	1.460		0.327	1.342	0.294	1.565		0.382	1.702	0.341	**4.468**		0.803	**75.193**	4.553
Radium-228 (Ra-228)	EPA 901.1	15.9	1.835	0.509	U		1.927		0.572	U		1.940		0.449	U		8.187		1.442	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.765	0.207	23.728	0.524	0.639		0.182	0.282	0.021	0.601		0.179	0.343	0.025	2.615		0.477	60.762	1.138
Thorium-234 (Th-234)	EPA 901.1	47,900	3.326	1.669	U		1.521		2.351	U		2.326		4.135	U		3.016		4.140	88.108	6.431
Uranium-235 (U-235)	EPA 901.1	39.2	0.770	1.015	U		1.271		1.657	U		0.937		0.965	U		4.315		2.201	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.82	0.586	27.717	4.379	0.910		0.378	U		1.63		0.493	U		6.85		1.40	113.163	9.089
Thorium-230 (Th-230)	HSL-300	2,090	1.57	0.554	U		0.677		0.293	U		1.33		0.421	U		3.26		0.803	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.954	0.385	U		0.843		0.325	U		1.01		0.356	U		6.52		1.34	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.74	0.404	U		1.06		0.298	U		1.33		0.367	U		2.65		0.581	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.304	0.152	U		0.034		0.070	U		0.052		0.082	U		0.144		0.113	U	
Uranium-238 (U-238)	HSL-300	3,720	1.99	0.445	U		0.951		0.275	U		1.11		0.324	U		2.49		0.552	U	

	RST 3 Sample Number	N002-A05-S002-0612-01					N002-A05-S002-1218-01					N002-A05-S002-1824-01					N002-A05-S003-0006-01				
	Sample Depth (inches)	6-12					12-18					18-24					0-6				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		53.038	0.573	U			81.529	0.857	U			0.879	0.043	U			11.897	0.201
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.657	2.620	57.695	1.349	5.562		2.116	86.290	1.925	2.499		1.961	1.215	0.172	7.405		3.091	12.524	0.627
Cesium-137 (Cs-137)	EPA 901.1	11	0.044	0.155	U		-0.009		0.191	U		0.204		0.149	0.117	0.015	0.268		0.221	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	2.893	0.493	17.356	0.635	3.735		0.640	40.722	1.142	1.731		0.361	0.965	0.044	5.241		0.848	9.029	0.277
Potassium-40 (K-40)	EPA 901.1	25.9	16.192	3.026	11.719	0.638	17.545		3.814	14.733	0.783	19.854		3.675	12.890	0.508	17.310		3.809	11.320	0.590
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	4.852	14.699	U		4.869		18.281	U		0.000		3.270	U		10.614		14.983	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	**2.524**	0.473	**23.806**	2.125	2.419		0.508	**41.222**	2.925	1.543		0.332	1.578	0.274	**3.649**		0.681	**7.641**	0.978
Radium-228 (Ra-228)	EPA 901.1	15.9	2.938	0.605	U		3.977		0.913	U		1.854		0.509	U		5.450		1.001	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.983	0.243	17.565	0.368	1.214		0.329	27.696	0.571	0.604		0.185	0.289	0.020	1.948		0.404	4.141	0.128
Thorium-234 (Th-234)	EPA 901.1	47,900	2.776	4.923	U		4.420		1.839	33.448	2.223	3.024		3.298	U		2.411		2.466	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.066	1.853	U		1.343		1.168	U		0.000		0.636	U		4.070		2.140	U	
Thorium-228 (Th-228)	HSL-300	14,100	2.31	0.750	7.441	2.991	2.64		0.835	49.112	5.090	1.53		0.465	1.370	0.886	3.57		1.02	9.009	8.944
Thorium-230 (Th-230)	HSL-300	2,090	1.32	0.518	U		1.71		0.620	U		1.06		0.366	U		1.50		0.607	U	
Thorium-232 (Th-232)	HSL-300	2,020	2.18	0.682	U		2.84		0.833	U		1.45		0.434	U		3.30		0.953	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.57	0.375	U		1.59		0.387	U		1.19		0.338	U		1.29		0.322	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.067	0.071	U		0.130		0.102	U		0.047		0.074	U		0.063		0.067	U	
Uranium-238 (U-238)	HSL-300	3,720	1.41	0.348	U		1.66		0.399	U		1.31		0.350	U		1.67		0.384	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 10A: Area 5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
October 12, 2016

	RST 3 Sample Number	N002-A05-S003-0006-02					N002-A05-S003-0612-01					N002-A05-S007-0006-01					N002-A05-S007-0612-01				
	Sample Depth (inches)	0-6					6-12					0-6					6-12				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		4.269	0.113	U			33.474	0.418	U			3.157	0.077	U			1.659	0.055
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	8.709	2.755	4.664	0.458	8.400		2.951	36.348	1.093	3.000		2.000	3.334	0.277	2.791		1.937	1.535	0.208
Cesium-137 (Cs-137)	EPA 901.1	11	0.232	0.127	0.091	0.024	-0.028		0.283	U		0.048		0.170	0.087	0.021	0.206		0.168	0.057	0.015
Lead-212 (Pb-212)	EPA 901.1	661,000	5.160	0.811	4.240	0.145	4.924		0.824	18.619	0.565	2.078		0.403	2.438	0.093	1.845		0.372	1.418	0.062
Potassium-40 (K-40)	EPA 901.1	25.9	16.537	3.297	12.338	0.586	14.674		3.445	12.994	0.661	15.683		3.589	12.758	0.516	15.075		3.360	8.312	0.384
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	0.000	6.352	U		0.000		8.861	U		4.792		15.467	U		10.165		7.713	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	**3.467**	0.552	**5.308**	0.679	**3.719**		0.660	**16.729**	1.692	1.783		0.353	**3.276**	0.487	1.735		0.386	**2.845**	0.361
Radium-228 (Ra-228)	EPA 901.1	15.9	5.288	0.991	U		5.678		1.065	U		2.259		0.502	U		2.171		0.551	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	1.867	0.343	1.473	0.063	1.661		0.359	11.300	0.286	0.829		0.206	1.027	0.044	0.680		0.194	0.517	0.026
Thorium-234 (Th-234)	EPA 901.1	47,900	8.099	3.997	U		4.345		1.921	U		2.967		2.738	U		2.868		1.729	U	
Uranium-235 (U-235)	EPA 901.1	39.2	3.540	2.655	U		2.240		1.760	U		0.106		1.926	U		0.153		1.671	U	
Thorium-228 (Th-228)	HSL-300	14,100	4.04	1.08	U		2.82		0.883	22.983	2.247	1.39		0.499	3.302	0.950	1.68		0.684	U	
Thorium-230 (Th-230)	HSL-300	2,090	2.14	0.696	U		1.16		0.505	U		1.01		0.386	U		2.15		0.746	U	
Thorium-232 (Th-232)	HSL-300	2,020	3.32	0.915	U		2.85		0.851	U		1.48		0.479	U		0.914		0.458	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.50	0.373	U		1.69		0.407	U		1.64		0.392	U		1.07		0.293	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.112	0.095	U		0.117		0.095	U		0.219		0.131	U		0.075		0.074	U	
Uranium-238 (U-238)	HSL-300	3,720	1.62	0.393	U		2.02		0.460	U		1.54		0.374	U		1.02		0.285	U	

	RST 3 Sample Number	N002-A05-S007-1218-01					N002-A05-S007-1824-01					N002-A05-S008-0006-01					N002-A05-S008-0612-01				
	Sample Depth (inches)	12-18					18-24					0-6					6-12				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		163.193	1.634	U			1.760	0.057	U			1.320	0.076	U			7.936	0.160
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	3.014	2.565	166.131	3.306	4.283		2.667	2.011	0.236	4.333		1.376	1.604	0.373	3.761		2.809	8.916	0.532
Cesium-137 (Cs-137)	EPA 901.1	11	0.067	0.131	U		0.324		0.150	0.089	0.016	0.105		0.121	U		0.112		0.166	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	2.576	0.459	64.010	1.952	3.662		0.628	1.640	0.063	2.107		0.389	1.229	0.072	2.524		0.471	4.143	0.237
Potassium-40 (K-40)	EPA 901.1	25.9	19.449	3.433	21.410	1.277	14.889		3.756	12.479	0.495	17.233		3.247	10.720	0.544	17.920		4.136	11.728	0.593
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	1.769	13.943	51.130	7.480	7.397		7.176	U		0.000		7.225	13.359	2.995	5.392		13.531	14.265	3.383
Radium-226* (Ra-226)	EPA 901.1	2.48	2.055	0.346	**62.725**	4.171	2.051		0.435	2.126	0.448	1.700		0.352	**24.247**	1.474	2.142		0.446	**20.136**	1.481
Radium-228 (Ra-228)	EPA 901.1	15.9	2.899	0.667	U		3.581		0.750	U		2.302		0.534	U		1.871		0.586	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.851	0.221	56.437	1.083	1.143		0.262	0.599	0.030	0.760		0.193	0.404	0.035	0.953		0.251	2.479	0.090
Thorium-234 (Th-234)	EPA 901.1	47,900	1.906	2.396	73.349	5.527	3.868		3.140	2.483	0.263	1.599		1.718	15.704	0.862	1.953		1.913	10.417	0.760
Uranium-235 (U-235)	EPA 901.1	39.2	0.243	1.776	U		1.780		1.546	U		0.000		0.929	U		0.699		0.699	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.34	0.714	59.248	10.227	2.06		0.690	U		1.72		0.588	U		2.11		0.740	3.694	2.210
Thorium-230 (Th-230)	HSL-300	2,090	2.31	0.969	U		2.55		0.751	U		0.954		0.437	U		1.05		0.473	U	
Thorium-232 (Th-232)	HSL-300	2,020	1.40	0.692	U		1.60		0.554	U		1.08		0.427	U		1.51		0.571	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.56	0.391	U		1.55		0.398	U		1.13		0.304	U		1.26		0.332	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.138	0.105	U		0.054		0.078	U		0.072		0.076	U		0.053		0.069	U	
Uranium-238 (U-238)	HSL-300	3,720	1.27	0.335	U		1.59		0.402	U		1.32		0.329	U		1.26		0.331	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 10A: Area 5 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
October 12, 2016

	RST 3 Sample Number	N002-A05-S009-0612-01					N002-A05-S010-0612-01					N002-A05-S011-0006-01					N002-A05-S011-0612-01				
	Sample Depth (inches)	6-12					6-12					0-6					6-12				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		229.835	2.396	U			102.260	1.057	U			46.103	0.508	U			10.312	0.168
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.437	2.253	238.669	5.664	4.407		1.407	113.620	2.319	8.843		2.842	50.461	1.215	8.849		2.496	11.247	0.484
Cesium-137 (Cs-137)	EPA 901.1	11	-0.017	0.136	U		0.533		0.236	U		0.134		0.237	0.106	0.022	0.451		0.158	0.079	0.014
Lead-212 (Pb-212)	EPA 901.1	661,000	2.391	0.451	103.575	3.047	3.460		0.575	31.062	1.019	7.161		1.087	12.477	0.477	6.956		1.046	8.796	0.242
Potassium-40 (K-40)	EPA 901.1	25.9	17.173	3.179	25.867	1.345	11.008		2.289	U		13.904		3.132	6.152	0.487	12.264		2.836	9.932	0.505
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	0.134	12.173	73.029	9.225	7.989		15.093	U		5.903		19.526	U		0.000		4.993	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.995	0.434	**118.096**	6.500	**2.886**		0.537	**37.621**	3.099	**4.311**		0.724	**18.259**	2.018	**4.370**		0.733	**8.948**	1.190
Radium-228 (Ra-228)	EPA 901.1	15.9	2.740	0.631	U		3.491		0.727	U		6.695		1.166	U		7.737		1.323	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.834	0.177	80.172	1.481	1.354		0.267	35.847	0.724	2.088		0.409	15.716	0.352	2.397		0.414	3.599	0.112
Thorium-234 (Th-234)	EPA 901.1	47,900	1.152	4.879	83.017	4.932	1.957		5.501	78.406	4.386	4.100		3.991	U		2.007		6.656	11.733	0.805
Uranium-235 (U-235)	EPA 901.1	39.2	0.000	0.792	U		3.453		1.899	U		1.212		1.371	U		0.000		1.785	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.92	0.825	111.643	11.142	2.80		0.732	34.278	5.454	5.31		1.16	11.813	2.786	5.55		1.34	12.694	1.848
Thorium-230 (Th-230)	HSL-300	2,090	0.929	0.509	U		0.890		0.389	U		2.15		0.601	U		1.90		0.653	U	
Thorium-232 (Th-232)	HSL-300	2,020	1.86	0.738	U		1.37		0.451	U		4.66		1.03	U		4.78		1.18	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	1.07	0.285	U		2.35		0.521	U		2.23		0.515	U		2.25		0.487	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.082	0.077	U		0.300		0.157	U		0.148		0.117	U		0.124		0.094	U	
Uranium-238 (U-238)	HSL-300	3,720	1.11	0.292	U		2.32		0.509	U		1.94		0.467	U		2.39		0.509	U	

	RST 3 Sample Number	N002-A05-S011-1218-01					N002-A05-S011-1824-01					N002-A05-S011-2430-01					N002-A05-S011-3036-01				
	Sample Depth (inches)	12-18					18-24					24-30					30-36				
	Sample Matrix	Soil					Soil					Soil					Soil				
	Sample Date	10/12/2016					10/12/2016					10/12/2016					10/12/2016				
	Data Type	Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																			
Actinium-228 (Ac-228)	EPA 901.1	126,000	U		57.814	0.643	U			69.672	0.769	U			24.843	0.324	U			41.492	0.479
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	14.452	3.737	62.316	1.516	5.293		1.556	73.925	1.812	3.461		2.745	26.246	0.897	2.811		3.274	42.982	1.317
Cesium-137 (Cs-137)	EPA 901.1	11	-0.023	0.306	U		0.170		0.124	U		0.042		0.173	U		0.102		0.190	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	10.546	1.558	32.853	0.887	3.984		0.653	27.202	0.897	2.617		0.486	17.119	0.430	4.557		0.758	22.801	0.702
Potassium-40 (K-40)	EPA 901.1	25.9	15.694	3.637	12.132	0.709	17.917		3.252	13.836	0.782	17.414		3.760	11.672	0.573	18.471		3.878	9.673	0.614
Protactinium-234M (Pa-234m)	EPA 901.1	71,100	0.000	13.226	U		10.014		15.260	U		7.109		18.092	U		1.711		20.418	16.969	3.854
Radium-226* (Ra-226)	EPA 901.1	2.48	**5.588**	0.940	**23.028**	2.282	**2.637**		0.550	**34.536**	2.843	2.214		0.455	**13.137**	1.217	**3.529**		0.676	**27.766**	1.881
Radium-228 (Ra-228)	EPA 901.1	15.9	11.669	1.900	U		3.674		0.695	U		3.207		0.890	U		5.244		0.975	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	4.127	0.684	20.016	0.441	1.277		0.263	24.127	0.531	0.862		0.232	8.473	0.212	1.608		0.339	13.844	0.323
Thorium-234 (Th-234)	EPA 901.1	47,900	1.777	4.963	U		1.729		2.199	U		3.463		2.839	23.080	1.382	7.274		3.015	36.708	2.264
Uranium-235 (U-235)	EPA 901.1	39.2	6.048	2.961	U		0.000		1.383	U		1.125		1.376	U		1.283		1.892	U	
Thorium-228 (Th-228)	HSL-300	14,100	6.74	1.48	27.393	22.006	3.32		0.983	34.115	4.888	1.49		0.493	U		5.28		1.28	30.576	12.126
Thorium-230 (Th-230)	HSL-300	2,090	3.06	0.828	U		1.91		0.674	U		0.955		0.388	U		2.01		0.665	U	
Thorium-232 (Th-232)	HSL-300	2,020	5.49	1.25	U		2.89		0.872	U		1.15		0.411	U		4.18		1.06	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	2.96	0.606	U		1.99		0.470	U		1.52		0.388	U		1.92		0.456	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.105	0.089	U		0.170		0.121	U		0.120		0.098	U		0.070		0.082	U	
Uranium-238 (U-238)	HSL-300	3,720	2.47	0.526	U		2.08		0.486	U		1.86		0.440	U		1.93		0.455	U	

Notes:

RST 3 - Removal Support Team 3.

U - Not detected.

pCi/g - picocuries per gram.

Screening data collected using High Purity Germanium (HPGe) detector.

[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.

Radium-226* (21-day ingrowth).

Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 10B: Area 5 Post-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
December 8, 9 and 13, 2016

	RST 3 Sample Number		A5-CS001-0006-01					A5-CS002-0006-01					A5-CS003-0006-01					A5-CS004-0006-01				
	Sample Depth (inches)		0-6					0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		12/8/2016					12/9/2016					12/8/2016					12/8/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			0.659	0.031	U			0.691	0.034	U			0.764	0.030	U			0.621	0.028
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.291		2.430	0.794	0.134	1.064		1.512	0.516	0.116	3.751		1.463	0.637	0.102	2.656		1.831	0.823	0.094
Cesium-137 (Cs-137)	EPA 901.1	11	0.000		0.027	U		0.032		0.182	U		-0.030		0.147	U		0.042		0.090	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.570		0.338	0.635	0.030	1.637		0.366	0.687	0.031	1.401		0.308	0.621	0.031	1.319		0.306	0.531	0.027
Potassium-40 (K-40)	EPA 901.1	25.9	23.922		4.501	12.568	0.458	20.510		4.432	13.337	0.480	21.357		4.140	13.948	0.480	22.793		4.592	11.537	0.417
Protactinium-234M (Pa-234-M)	EPA 901.1	71,100	10.296		16.423	U		16.254		17.408	U		0.000		3.031	U		4.526		13.667	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.251		0.325	0.914	0.235	1.869		0.462	1.107	0.227	1.497		0.339	1.455	0.233	0.968		0.295	0.850	0.195
Radium-228 (Ra-228)	EPA 901.1	15.9	1.576		0.769	U		1.084		0.724	U		1.543		0.448	U		1.181		0.490	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.494		0.154	0.212	0.015	0.568		0.174	0.261	0.016	0.454		0.125	0.229	0.016	0.440		0.249	0.194	0.014
Thorium-228 (Th-228)	EPA 901.1	14,100	0.000		8.847	U		5.674		6.096	U		1.590		10.501	U		5.803		7.129	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	2.024		3.067	0.996	0.284	3.317		2.412	U		3.345		3.150	U		1.309		2.265	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.000		1.186	U		0.385		1.566	U		0.000		1.058	U		0.230		0.420	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.972		0.325	U		1.07		0.365	U		1.24		0.387	U		1.17		0.381	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.894		0.300	U		1.05		0.336	U		1.38		0.409	U		0.903		0.306	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.976		0.310	U		0.987		0.320	U		1.19		0.363	U		0.774		0.276	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.929		0.274	U		1.19		0.324	U		0.966		0.284	U		0.574		0.213	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.029		0.069	U		0.195		0.135	U		0.084		0.086	U		0.022		0.075	U	
Uranium-238 (U-238)	HSL-300	3,720	0.901		0.265	U		0.848		0.259	U		0.770		0.240	U		0.768		0.252	U	

	RST 3 Sample Number		A5-CS004-0006-02					A5-CS005-0006-01					A5-CS006-0006-01					A5-CS007-0006-01				
	Sample Depth (inches)		0-6					0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		12/8/2016					12/9/2016					12/8/2016					12/8/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			0.616	0.028	U			0.823	0.034	U			0.609	0.035	U			0.623	0.033
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.461		1.332	0.809	0.135	2.542		1.240	0.701	0.159	0.653		0.927	0.593	0.121	1.272		1.438	0.656	0.124
Cesium-137 (Cs-137)	EPA 901.1	11	0.039		0.083	U		0.009		0.103	U		0.000		0.078	U		0.040		0.117	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.178		0.278	0.547	0.026	1.215		0.295	0.780	0.036	1.065		0.275	0.566	0.030	1.241		0.290	0.604	0.029
Potassium-40 (K-40)	EPA 901.1	25.9	19.956		3.550	11.908	0.425	20.740		4.101	13.288	0.501	18.364		3.890	11.106	0.429	20.875		3.929	12.477	0.445
Protactinium-234M (Pa-234-M)	EPA 901.1	71,100	0.000		4.457	U		0.000		2.134	U		4.293		12.961	U		0.152		15.254	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.310		0.251	1.280	0.242	1.414		0.336	1.632	0.349	1.212		0.250	1.139	0.251	1.245		0.291	0.684	0.294
Radium-228 (Ra-228)	EPA 901.1	15.9	1.318		0.377	U		1.787		0.415	U		1.310		0.467	U		1.580		0.489	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.294		0.158	0.210	0.014	0.552		0.172	0.261	0.018	0.443		0.154	0.216	0.016	0.449		0.143	0.180	0.013
Thorium-228 (Th-228)	EPA 901.1	14,100	11.702		8.605	U		0.483		9.600	U		3.093		6.397	U		6.946		7.815	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	1.238		4.281	0.630	0.278	2.258		2.464	U		1.576		1.939	U		1.574		2.902	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.000		0.639	U		0.000		0.608	U		0.263		1.314	U		0.000		0.879	U	
Thorium-228 (Th-228)	HSL-300	14,100	0.836		0.323	U		1.01		0.329	U		1.04		0.350	U		1.09		0.352	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.628		0.257	U		0.901		0.299	U		0.597		0.261	U		0.947		0.309	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.852		0.298	U		0.879		0.286	U		0.846		0.298	U		0.864		0.287	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.693		0.240	U		0.862		0.266	U		0.724		0.264	U		0.646		0.216	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.042		0.075	U		0.029		0.069	U		0.069		0.084	U		0.050		0.066	U	
Uranium-238 (U-238)	HSL-300	3,720	0.628		0.221	U		1.08		0.301	U		1.02		0.309	U		0.789		0.240	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).

Table 10B: Area 5 Post-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
December 8, 9 and 13, 2016

	RST 3 Sample Number		A5-CS008-0006-01					A5-CS009-0006-01					A5-CS010-0006-01					A5-CS011-0006-01				
	Sample Depth (inches)		0-6					0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil					Soil				
	Sample Date		12/8/2016					12/8/2016					12/8/2016					12/8/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																				
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			0.675	0.032	U			0.737	0.035	U			0.721	0.033	U			0.737	0.033
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.512		1.916	0.796	0.117	1.781		2.107	0.935	0.170	1.014		2.872	0.848	0.145	0.983		1.696	0.664	0.136
Cesium-137 (Cs-137)	EPA 901.1	11	0.037		0.125	U		0.036		0.100	U		0.000		0.028	U		-0.052		0.168	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.327		0.326	0.589	0.034	1.411		0.306	0.792	0.037	1.173		0.323	0.611	0.033	1.244		0.299	0.646	0.032
Potassium-40 (K-40)	EPA 901.1	25.9	25.297		5.024	14.064	0.506	21.067		4.031	14.610	0.535	23.265		4.962	13.509	0.487	21.787		4.628	13.533	0.494
Protactinium-234M (Pa-234-M)	EPA 901.1	71,100	0.000		3.705	U		0.863		15.082	U		7.632		15.391	U		0.000		5.574	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.505		0.383	0.939	0.233	1.498		0.315	1.328	0.258	1.559		0.364	1.743	0.257	1.390		0.327	1.727	0.276
Radium-228 (Ra-228)	EPA 901.1	15.9	1.058		0.497	U		0.902		0.436	U		1.246		0.521	U		1.679		0.518	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.410		0.245	0.244	0.017	0.348		0.165	0.270	0.018	0.379		0.201	0.270	0.017	0.632		0.151	0.234	0.016
Thorium-228 (Th-228)	EPA 901.1	14,100	5.613		8.046	U		10.050		8.418	0.802	0.852	6.054		8.271	U		9.216		8.228	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	2.759		1.976	U		3.531		2.449	U		1.269		2.455	U		3.018		3.181	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.532		1.680	U		0.000		1.028	U		0.490		1.379	U		0.355		1.720	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.10		0.370	U		1.13		0.370	U		1.08		0.356	U		1.25		0.381	U	
Thorium-230 (Th-230)	HSL-300	2,090	1.06		0.341	U		1.16		0.355	U		0.799		0.281	U		1.06		0.335	U	
Thorium-232 (Th-232)	HSL-300	2,020	1.00		0.326	U		1.06		0.334	U		1.42		0.398	U		0.666		0.247	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.909		0.259	U		1.11		0.300	U		0.765		0.235	U		0.756		0.240	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.100		0.085	U		0.089		0.090	U		0.094		0.081	U		0.075		0.079	U	
Uranium-238 (U-238)	HSL-300	3,720	0.970		0.269	U		1.01		0.282	U		0.947		0.266	U		1.10		0.292	U	

	RST 3 Sample Number		A5-CS012-0006-01					A5-CS014-0006-01					A5-CS015-0006-01				
	Sample Depth (inches)		0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil				
	Sample Date		12/8/2016					12/13/2016					12/13/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**															
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			0.727	0.032	U			0.777	0.040	U			0.780	0.037
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	1.689		1.527	0.743	0.131	1.717		1.181	0.761	0.138	2.176		1.536	0.623	0.151
Cesium-137 (Cs-137)	EPA 901.1	11	0.032		0.110	U		0.042		0.128	U		0.031		0.121	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.124		0.279	0.597	0.029	1.454		0.305	0.691	0.035	1.135		0.280	0.685	0.034
Potassium-40 (K-40)	EPA 901.1	25.9	20.721		4.196	13.025	0.464	20.396		3.620	14.227	0.518	20.454		4.056	13.211	0.506
Protactinium-234M (Pa-234-M)	EPA 901.1	71,100	11.632		8.116	U		0.862		15.076	U		4.374		15.720	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.238		0.293	1.219	0.259	1.583		0.335	1.411	0.241	1.257		0.297	1.584	0.288
Radium-228 (Ra-228)	EPA 901.1	15.9	0.992		0.531	U		1.586		0.462	U		1.713		0.475	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.405		0.141	0.228	0.014	0.460		0.163	0.257	0.018	0.530		0.160	0.228	0.017
Thorium-228 (Th-228)	EPA 901.1	14,100	0.892		8.070	U		4.639		9.127	U		5.208		4.140	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	0.000		1.740	U		1.560		1.998	U		0.049		2.039	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.000		0.812	U		0.610		1.325	U		0.000		0.762	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.16		0.374	U		1.21		0.381	U		0.849		0.303	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.902		0.313	U		0.796		0.276	U		1.05		0.341	U	
Thorium-232 (Th-232)	HSL-300	2,020	1.01		0.327	U		1.09		0.331	U		0.986		0.318	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.781		0.233	U		0.649		0.217	U		0.541		0.209	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.125		0.095	U		-0.004		0.067	U		0.025		0.069	U	
Uranium-238 (U-238)	HSL-300	3,720	0.731		0.220	U		0.951		0.272	U		0.860		0.260	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).

Table 10C: Area 5 LCP Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
December 15, 2016

	RST 3 Sample Number		A5-LCP01-01					A5-LCP02-01					A5-LCP03-01					A5-LCP04-01					A5-LCP05-01				
	Sample Depth (inches)		0-6					0-6					0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil					Soil					Soil				
	Sample Date		12/15/2016					12/15/2016					12/15/2016					12/15/2016					12/15/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																									
Actinium 228 (Ac-228)	EPA 901.1	126,000	U			0.811	0.040	U			0.595	0.036	U			0.878	0.039	U			0.711	0.044	U			0.687	0.033
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	2.608		1.794	0.830	0.158	1.759		1.774	1.158	0.183	1.563		2.159	0.907	0.162	1.118		2.398	0.609	0.149	0.697		1.939	0.780	0.127
Cesium-137 (Cs-137)	EPA 901.1	11	0.051		0.162	0.062	0.012	0.121		0.110	0.032	0.010	-0.039		0.160	U		0.093		0.132	0.049	0.012	0.078		0.068	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	1.209		0.288	0.726	0.038	1.208		0.299	0.691	0.034	1.259		0.303	0.665	0.034	1.063		0.286	0.707	0.035	1.050		0.264	0.579	0.030
Potassium-40 (K-40)	EPA 901.1	25.9	17.878		3.338	11.747	0.468	18.668		4.916	11.753	0.469	17.178		4.337	13.785	0.528	19.487		4.164	12.819	0.506	19.651		3.493	12.302	0.453
Protactinium-234M (Pa-234M)	EPA 901.1	71,100	9.780		14.463	U		3.452		14.107	U		3.470		17.676	U		0.000		3.622	U		0.000		5.174	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.728		0.327	**2.729**	0.343	1.311		0.323	1.331	0.294	1.404		0.328	1.635	0.263	1.466		0.387	1.801	0.416	1.329		0.275	1.705	0.308
Radium-228 (Ra-228)	EPA 901.1	15.9	1.439		0.411	U		0.762		0.484	U		1.276		0.590	U		1.131		0.490	U		1.834		0.443	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.415		0.181	0.278	0.020	0.508		0.158	0.252	0.018	0.430		0.196	0.256	0.018	0.521		0.188	0.250	0.018	0.372		0.133	0.225	0.015
Thorium-228 (Th-228)	EPA 901.1	14,100	0.793		9.753	U		7.299		8.281	U		0.000		7.193	U		1.580		8.271	U		1.623		8.054	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	1.306		5.003	U		0.718		2.516	1.044	0.333	1.036		4.499	U		1.472		1.699	1.356	0.368	1.547		2.647	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.000		0.947	U		0.253		0.409	U		0.000		0.858	U		0.000		0.268	U		0.219		1.358	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.45		0.407	U		0.919		0.324	U		1.33		0.392	U		1.01		0.349	U		1.30		0.407	U	
Thorium-230 (Th-230)	HSL-300	2,090	1.11		0.336	U		0.912		0.297	U		1.03		0.332	U		1.05		0.335	U		1.28		0.386	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.927		0.295	U		0.962		0.305	U		0.985		0.313	U		1.03		0.328	U		1.15		0.356	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.993		0.292	U		0.898		0.287	U		0.596		0.212	U		0.897		0.272	U		0.790		0.273	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.096		0.092	U		0.001		0.082	U		0.077		0.076	U		0.209		0.130	U		0.067		0.081	U	
Uranium-238 (U-238)	HSL-300	3,720	1.05		0.294	U		1.13		0.331	U		0.754		0.239	U		0.691		0.226	U		0.730		0.249	U	

	RST 3 Sample Number		A5-LCP06-01					A5-LCP07-01					A5-LCP08-01					A5-LCP09-01					A5-LCP10-01				
	Sample Depth (inches)		0-6					0-6					0-6					0-6					0-6				
	Sample Matrix		Soil					Soil					Soil					Soil					Soil				
	Sample Date		12/15/2016					12/15/2016					12/15/2016					12/15/2016					12/15/2016				
	Data Type		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening		Laboratory Analysis			HPGe Screening	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty	Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**																									
Actinium 228 (Ac-228)	EPA 901.1	126,000	U			0.719	0.041	U			0.615	0.033	U			0.707	0.043	U			0.803	0.044	U			0.737	0.048
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	0.293		1.716	0.518	0.141	1.606		1.574	0.711	0.133	0.000		1.017	0.665	0.150	0.822		0.955	0.732	0.169	0.952		0.861	0.721	0.150
Cesium-137 (Cs-137)	EPA 901.1	11	0.062		0.147	0.065	0.014	0.054		0.144	0.030	0.008	0.076		0.138	0.050	0.011	0.000		0.068	0.055	0.009	0.079		0.124	0.030	0.012
Lead-212 (Pb-212)	EPA 901.1	661,000	1.080		0.264	0.695	0.035	1.299		0.309	0.585	0.030	1.117		0.281	0.667	0.034	1.325		0.322	0.824	0.041	1.116		0.281	0.727	0.036
Potassium-40 (K-40)	EPA 901.1	25.9	17.540		3.367	11.480	0.484	18.205		4.466	11.911	0.460	17.845		3.379	11.936	0.467	17.318		3.894	13.761	0.559	17.522		3.812	12.738	0.501
Protactinium-234M (Pa-234M)	EPA 901.1	71,100	0.000		1.385	U		1.417		17.836	U		0.000		9.978	U		8.818		15.354	U		0.794		12.731	U	
Radium-226* (Ra-226)	EPA 901.1	2.48	1.279		0.299	1.998	0.347	1.372		0.308	1.708	0.362	0.980		0.271	1.476	0.295	1.599		0.424	1.706	0.332	1.590		0.358	1.653	0.258
Radium-228 (Ra-228)	EPA 901.1	15.9	1.103		0.357	U		1.055		0.466	U		1.199		0.421	U		1.325		0.476	U		1.351		0.406	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	0.345		0.111	0.202	0.018	0.516		0.156	0.210	0.015	0.439		0.148	0.213	0.017	0.440		0.163	0.246	0.020	0.596		0.190	0.242	0.018
Thorium-228 (Th-228)	EPA 901.1	14,100	0.000		4.448	U		0.000		5.226	U		5.701		8.168	U		5.329		4.921	U		5.185		6.919	U	
Thorium-234 (Th-234)	EPA 901.1	47,900	0.403		4.310	U		0.654		2.458	U		0.000		2.824	U		1.581		2.184	U		1.582		2.056	U	
Uranium-235 (U-235)	EPA 901.1	39.2	0.126		1.586	U		0.000		0.315	U		0.533		1.333	U		0.000		0.619	U		0.441		0.631	U	
Thorium-228 (Th-228)	HSL-300	14,100	1.42		0.407	U		1.01		0.324	U		0.817		0.280	U		0.998		0.325	U		1.18		0.384	U	
Thorium-230 (Th-230)	HSL-300	2,090	0.997		0.311	U		0.773		0.261	U		0.847		0.271	U		0.809		0.284	U		0.999		0.330	U	
Thorium-232 (Th-232)	HSL-300	2,020	0.842		0.278	U		0.743		0.253	U		0.704		0.239	U		0.928		0.293	U		0.998		0.324	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	0.886		0.261	U		1.01		0.288	U		0.914		0.286	U		1.14		0.315	U		1.07		0.306	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.127		0.098	U		0.052		0.068	U		0.097		0.104	U		0.159		0.113	U		0.159		0.116	U	
Uranium-238 (U-238)	HSL-300	3,720	1.00		0.280	U		1.00		0.283	U		0.908		0.286	U		0.849		0.259	U		1.37		0.350	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 11: Area 7 Pre-Excavation Soil Analytical Results and Screening Data Summary Table
Niagara Falls Boulevard Site
Niagara Falls Boulevard, Niagara Falls, New York
October 14, 2016

	RST 3 Sample Number		**N002-A07-S001-0006-01**				
	Sample Depth (inches)		0-6				
	Sample Matrix		Soil				
	Sample Date		10/14/2016				
	Data Type		**Laboratory Analysis**			**HPGe Screening**	
	Sample Result		Value (pCi/g)	Qualifier	Total Uncertainty	Value (pCi/g)	Total Uncertainty
Radioisotope	**Analysis Method**	**[1]EPA SSAL**					
Actinium-228 (Ac-228)	EPA 901.1	126,000	U			322.576	3.108
Bismuth-212 (Bi-212)	EPA 901.1	6,330,000	325.880		44.160	346.298	6.118
Cesium-137 (Cs-137)	EPA 901.1	11	-0.248		0.650	U	
Lead-212 (Pb-212)	EPA 901.1	661,000	293.730		41.371	127.096	3.719
Potassium-40 (K-40)	EPA 901.1	25.9	6.180		3.331	U	
Protactinium-234M (Pa-234M)	EPA 901.1	71,100	17.864		191.790	128.264	9.366
Radium-226* (Ra-226)	EPA 901.1	2.48	**64.579**		8.700	**143.093**	8.586
Radium-228 (Ra-228)	EPA 901.1	15.9	**295.150**		39.144	U	
Thallium-208 (Tl-208)	EPA 901.1	3,430,000	95.977		12.858	110.341	1.971
Thorium-234 (Th-234)	EPA 901.1	47,900	28.418		16.470	118.765	9.496
Uranium-235 (U-235)	EPA 901.1	39.2	0.000		5.196	U	
Thorium-228 (Th-228)	HSL-300	14,100	20.2		3.62	154.767	16.446
Thorium-230 (Th-230)	HSL-300	2,090	6.95		1.46	U	
Thorium-232 (Th-232)	HSL-300	2,020	16.6		3.02	U	
Uranium-233/234 (U-233/234)	HSL-300	3,330	7.27		1.31	U	
Uranium-235/236 (U-235/236)	HSL-300	39.2	0.365		0.180	U	
Uranium-238 (U-238)	HSL-300	3,720	7.58		1.36	U	

Notes:
RST 3 - Removal Support Team 3.
U - Not detected.
pCi/g - picocuries per gram.
Screening data collected using High Purity Germanium (HPGe) detector.
[1]U.S. Environmental Protection Agency (EPA) Site-Specific Action Levels (SSALs) are presented in pCi/g.
Radium-226* (21-day ingrowth).
Values in red equal or exceed the EPA SSAL for the respective radioisotope.

Table 12: RV1 Waste Generation and Disposal Summary Table
Niagara Falls Boulevard Site
Niagara Falls, Niagara County, New York
December 2016 through June 2017

Manifest Number	Date Shipped	Total QTY	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility	Transporter
016689001JJK	12/15/2016	18.98	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689002JJK	12/15/2016	19.22	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689003JJK	12/15/2016	18.34	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689004JJK	12/19/2016	23.93	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689005JJK	12/19/2016	24	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689006JJK	12/19/2016	24.16	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689007JJK	12/19/2016	23.79	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689008JJK	12/19/2016	24.36	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689009JJK	12/19/2016	24.6	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689010JJK	12/19/2016	22.18	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689011JJK	12/19/2016	24.66	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689012JJK	12/19/2016	23.82	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689013JJK	12/19/2016	22.48	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689014JJK	12/20/2016	24.21	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689015JJK	12/20/2016	19.97	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689016JJK	12/20/2016	22.73	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689017JJK	12/20/2016	23.47	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689018JJK	12/20/2016	24.78	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689019JJK	12/20/2016	22.69	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689020JJK	12/20/2016	23.53	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689021JJK	12/20/2016	22.79	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689022JJK	12/20/2016	21.72	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689023JJK	12/20/2016	21.05	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689024JJK	12/21/2016	20.53	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689025JJK	12/21/2016	22.31	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689026JJK	12/21/2016	23.95	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689027JJK	12/21/2016	23.74	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689028JJK	12/21/2016	22.52	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689029JJK	12/21/2016	22.32	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689030JJK	12/21/2016	24.18	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689031JJK	12/21/2016	22.84	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689032JJK	12/21/2016	22.84	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689033JJK	12/21/2016	23.51	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689034JJK	1/5/2017	21.55	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689035JJK	1/5/2017	22.1	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689036JJK	1/5/2017	21.2	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689037JJK	1/5/2017	19.88	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689038JJK	1/5/2017	22.16	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689039JJK	1/5/2017	20.78	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689040JJK	1/5/2017	22.79	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689041JJK	1/5/2017	22.03	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689042JJK	1/5/2017	22.85	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689043JJK	1/5/2017	21.8	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689044JJK	1/6/2017	21.97	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689045JJK	1/6/2017	23.07	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689046JJK	1/6/2017	22.5	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689047JJK	1/6/2017	22.7	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689048JJK	1/6/2017	25.37	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689049JJK	1/6/2017	24.98	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689050JJK	1/6/2017	22.76	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689051JJK	1/6/2017	20.57	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689052JJK	1/6/2017	22.7	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689053JJK	1/9/2017	23.44	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689054JJK	1/9/2017	22.73	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689055JJK	1/9/2017	22.7	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689056JJK	1/9/2017	21.35	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689057JJK	1/9/2017	22.48	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689058JJK	1/9/2017	20.26	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689059JJK	1/9/2017	24.69	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689060JJK	1/9/2017	24.35	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport

Table 12: RV1 Waste Generation and Disposal Summary Table
Niagara Falls Boulevard Site
Niagara Falls, Niagara County, New York
December 2016 through June 2017

Manifest Number	Date Shipped	Total QTY	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility	Transporter
016689061JJK	1/9/2017	24.13	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689062JJK	1/9/2017	23.07	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689063JJK	1/10/2017	21.04	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689064JJK	1/10/2017	21.25	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689065JJK	1/10/2017	22.43	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689066JJK	1/10/2017	22.26	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689067JJK	1/10/2017	22.41	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689068JJK	1/10/2017	24.15	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689069JJK	1/10/2017	23.78	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689070JJK	1/10/2017	22.73	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689071JJK	1/10/2017	24.47	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689072JJK	1/10/2017	25.22	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689073JJK	1/11/2017	20.44	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689074JJK	1/11/2017	20.885	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689075JJK	1/11/2017	25.58	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689076JJK	1/11/2017	24.12	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689077JJK	1/11/2017	22.02	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689078JJK	1/11/2017	24.14	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689079JJK	1/11/2017	23.55	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689080JJK	1/11/2017	24.02	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689081JJK	1/11/2017	22.68	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689082JJK	1/11/2017	22.73	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689083JJK	1/12/2017	22.79	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689084JJK	1/12/2017	22.66	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689085JJK	1/12/2017	24.17	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689086JJK	1/12/2017	24.66	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689087JJK	1/12/2017	21.34	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689088JJK	1/12/2017	23.5	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689089JJK	1/12/2017	21.26	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689090JJK	1/12/2017	23.11	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689091JJK	1/12/2017	23.31	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689092JJK	1/12/2017	21.24	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689093JJK	1/13/2017	21.94	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689094JJK	1/13/2017	21.92	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689095JJK	1/13/2017	23.23	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689096JJK	1/13/2017	23.16	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689097JJK	1/13/2017	23.34	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689098JJK	1/13/2017	22.49	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689099JJK	1/13/2017	22.59	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689100JJK	1/13/2017	22.21	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689101JJK	1/13/2017	24.78	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689102JJK	1/13/2017	23.64	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689103JJK	1/17/2017	22.85	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689104JJK	1/17/2017	23.32	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689105JJK	1/17/2017	23.09	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689106JJK	1/17/2017	22.82	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689107JJK	1/17/2017	22.21	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689108JJK	1/17/2017	24.08	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689109JJK	1/17/2017	23.02	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689110JJK	1/17/2017	24.08	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689111JJK	1/17/2017	23.31	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689112JJK	1/17/2017	22.46	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689113JJK	1/18/2017	23.94	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689114JJK	1/18/2017	22.84	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689115JJK	1/18/2017	23.15	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689116JJK	1/18/2017	21.22	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689117JJK	1/18/2017	22.41	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689118JJK	1/18/2017	22.19	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689119JJK	1/18/2017	19.9	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689120JJK	1/18/2017	23.42	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport

Table 12: RV1 Waste Generation and Disposal Summary Table
Niagara Falls Boulevard Site
Niagara Falls, Niagara County, New York
December 2016 through June 2017

Manifest Number	Date Shipped	Total QTY	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility	Transporter
016689121JJK	1/18/2017	22.6	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689122JJK	1/18/2017	23.55	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689123JJK	1/19/2017	21.54	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689124JJK	1/19/2017	22.98	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689125JJK	1/19/2017	21.69	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689126JJK	1/19/2017	22.24	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689127JJK	1/19/2017	24.39	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689128JJK	1/19/2017	25.34	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689129JJK	1/19/2017	21.87	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689130JJK	1/19/2017	21.29	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689131JJK	1/19/2017	23.19	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689132JJK	1/19/2017	24.01	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689133JJK	1/20/2017	22.53	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689134JJK	1/20/2017	21.16	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689135JJK	1/20/2017	23.01	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689136JJK	1/20/2017	21.1	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689137JJK	1/20/2017	22.61	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689138JJK	1/20/2017	23.05	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689139JJK	1/20/2017	23.62	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689140JJK	1/20/2017	23.8	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689141JJK	1/20/2017	22.6	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689142JJK	1/20/2017	23.31	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689143JJK	1/21/2017	20.03	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689144JJK	1/21/2017	20.91	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689145JJK	1/21/2017	22.36	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689146JJK	1/21/2017	22.11	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689147JJK	1/21/2017	22.36	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689148JJK	1/21/2017	22.79	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689149JJK	1/21/2017	22.4	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689150JJK	1/21/2017	23.99	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689151JJK	1/21/2017	21.83	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689152JJK	1/21/2017	20.37	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689153JJK	1/22/2017	26.02	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689154JJK	1/22/2017	21.89	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689155JJK	1/22/2017	20.35	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689156JJK	1/22/2017	23.49	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689157JJK	1/22/2017	22.33	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689158JJK	1/22/2017	21.86	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689159JJK	1/22/2017	22.26	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689160JJK	1/22/2017	23.19	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689161JJK	1/22/2017	23.3	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689162JJK	1/22/2017	22.68	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689163JJK	1/23/2017	23.09	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689164JJK	1/23/2017	22.67	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689165JJK	1/23/2017	23.7	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689166JJK	1/23/2017	22.13	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689167JJK	1/23/2017	19.66	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689168JJK	1/23/2017	22.07	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689169JJK	6/12/2017	23.18	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689170JJK	6/12/2017	23.02	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689171JJK	6/12/2017	28.7	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689172JJK	6/12/2017	22.96	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689173JJK	6/13/2017	23.22	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689174JJK	6/13/2017	23.93	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689175JJK	6/13/2017	22.69	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689176JJK	6/13/2017	23	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689177JJK	6/13/2017	22.78	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689178JJK	6/13/2017	24.3	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689179JJK	6/13/2017	21.63	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689180JJK	6/13/2017	29.08	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport

Table 12: RV1 Waste Generation and Disposal Summary Table
Niagara Falls Boulevard Site
Niagara Falls, Niagara County, New York
December 2016 through June 2017

Manifest Number	Date Shipped	Total QTY	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility	Transporter
016689181JJK	6/13/2017	22.72	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689182JJK	6/13/2017	23.5	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689183JJK	6/14/2017	22.33	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689184JJK	6/14/2017	23.6	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689185JJK	6/14/2017	22.72	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689186JJK	6/14/2017	22.75	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689187JJK	6/14/2017	23.89	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689188JJK	6/14/2017	20.55	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689189JJK	6/14/2017	21.29	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689190JJK	6/14/2017	22.97	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689191JJK	6/14/2017	22.42	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689192JJK	6/14/2017	22.91	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689193JJK	6/14/2017	22.72	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689194JJK	6/14/2017	19.4	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689195JJK	6/14/2017	21.29	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689196JJK	6/14/2017	22.49	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689197JJK	6/14/2017	22.15	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689198JJK	6/14/2017	25.16	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689199JJK	6/14/2017	23.34	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	US Bulk Transport
016689200JJK	6/15/2017	22.55	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
016689201JJK	6/15/2017	22.52	Tons	Non DOT Regulated Material	None	Stabilization and Landfill	Wayne Disposal, Inc. Site #2 Landfill	Page ETC
Totals		**4573.795**	**Tons**					

ATTACHMENT C

Action Memorandum

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
NEW YORK, NEW YORK 10007

JUL 2 1 2016

SUBJECT: Confirmation of Verbal Authorization for an Emergency Removal Action at Niagara Falls Boulevard Site in Niagara Falls, NY

FROM: Eric M. Daly, On Scene Coordinator

TO: Walter E. Mugdan, Director
Emergency and Remedial Response Division

THRU: Eric Mosher, Chief
Response and Prevention Branch

The purpose of this memorandum is to confirm the Deputy Division Director's July 14, 2016 verbal authorization of $500,000.00 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site (Site ID# A23Q).

In 1978, the U.S. Department of Energy (DOE) conducted an aerial radiological survey of the Niagara Falls region and found more than 15 properties, including the Site, having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving.

Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

From December 2013 through May 2014, EPA Pre-Remedial conducted preliminary assessment at the Site. The program concluded that the Site did not meet the minimum criteria to be eligible for the inclusion on the EPA National Priorities List (NPL) for remediation. However, EPA continued to assess the site to determine if an action under the Removal Program is warranted.

From July 2015-August 2015, the USEPA Region 2 Removal Program conducted a Removal Assessment Evaluation (RSE) by further assessing radiological exposures in the interior and exterior of the property. The goal for this assessment was to determine the extent of contamination (i.e. how far does the contamination extend beyond the contamination area of concern determined by Pre-Remedial Program), as well as, determine interior contamination impacts (i.e. are workers/patrons exposed to elevated levels of radon/thoron or loose contamination).

Based on the conditions observed at the Site during the RSE, an emergency CERCLA removal action was warranted to begin on June 1, 2016 in order to remove the contaminated material in both the interior buildings and the parking lot surrounding both buildings to prevent further public exposure.

The removal action activities conducted at the Site that were authorized by the initial Verbal Authorization on May 13, 2016 included:

- Set up of office trailers, equipment trailer and instrumentation trailer.
- Construction of alternate storage room for GNBC Office Area materials.
- Clearing and removal of above ground vegetation in designated staging areas.
- Gamma survey of the proposed staging areas in the wooded areas.
- Hazardous staging area set up.
- Demolition of GNBC Office Area office non-load bearing walls.
- Removal of concrete flooring from GNBC Office Area.
- Initiation of the excavation and staging of contaminated material from GNBC Office Area.

The removal action activities proposed for the Site and authorized by this Confirmation of Verbal Authorization will include:

- Stabilization of GNBC Office structure due to newly discovered inefficient roof support and suspect perimeter wall footers. The construction of this addition was not by code and necessary steps must be taken to stabilize structure in order to continue work. Permanent measures must be taken to bring this structure up to code.
- Continuation of the excavation and staging of contaminated material from GNBC Office Area.
- Begin removal of asphalt, excavation of contaminated material from specific sections of the parking lot and staging.
- Initiate excavation and staging of contaminated material from other internal spaces within GNBC structure.
- Post excavation sampling, analysis of GNBC Office footprint and other excavated areas.
- Backfilling of cleared excavated area with clean fill.
- Bid out transport and disposal of contaminated material.

This confirmation memorandum will be followed by a full Action Memorandum to document the removal action and to request a 12-month exemption and ceiling increase.

cc: Prince
Daloia
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NEW YORK 10007-1866

ACTION MEMORANDUM-RV1

DATE: SEP 15 2016

SUBJECT: Action Memorandum to confirm the Verbal Authorizations, Ceiling Increase and a 12-Month and $2 Million Exemption at the Niagara Falls Boulevard Site, Niagara Falls New York

FROM: Walter E. Mugdan, Director
Emergency and Remedial Response Division

TO: Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

THRU: Reggie Cheatham, Director
Office of Emergency Management

Site ID: A23Q

I. PURPOSE

The purpose of this Action Memorandum is to document the decision to initiate an emergency response action described herein for the Niagara Falls Boulevard Site (Site) located at 9524, 9540, 9547, and 9626 Niagara Falls Boulevard, Niagara Falls, Niagara County, New York. On May 13, 2016, the On-Scene Coordinator (OSC) requested and was granted a verbal authorization by the Emergency and Remedial Response Division (ERRD) Director pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to initiate a removal action in the amount of $600,000, of which $500,000 was for mitigation contracting. On June 14, 2016, the OSC requested and was granted by the ERRD Deputy Director a second verbal authorization for an additional $500,000 for mitigation contracting, bringing the current project ceiling to $1,100,000.

The continued removal action would address the threats to public health, welfare, and the environment posed by the presence of radioactive contamination in the soil that underlies an active bowling alley, a building supply store, a parking lot, and select wooded areas located at the Site.

The total project ceiling requested in this Action Memorandum is $7,773,000.00 of Direct Extramural Funds, of which $6,748,000.00 would be for mitigation contracting.

The Action Memorandum would serve as approval for expenditures by EPA to take actions described herein to abate the imminent and substantial endangerment posed by hazardous substances at the Site.

The proposed removal of hazardous substances would be undertaken pursuant to Section 104(a)(1) of CERCLA, 42 U.S.C § 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300.415.

There are no nationally significant or precedent setting issues associated with this removal action.

II. SITE CONDITIONS

The Superfund Enterprise Management System (SEMS) identification number for this Site is NYN000206699. The proposed removal action is considered "time-critical".

A. Site Description

1. History

In 1978, the U.S. Department of Energy (DOE) conducted an aerial radiological survey of the Niagara Falls region and found more than 15 properties, including parcels that comprise the Site, having elevated levels of radiation above background levels. Beginning in September 2006 through July 2013, New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) conducted radiological surveys of the interior and exterior of the structures on both parcels. The Site was referred to the U.S. Environmental Protection Agency (EPA) by the NYSDEC and the NYSDOH on July 21, 2013 to assess the Site for a potential CERCLA response action.

2. Removal Site Evaluation

Concepts

Elements within the periodic table are comprised of both unstable and stable forms. Unstable elements are known as "radionuclides," and give off radiation in the form of a wave (i.e. gamma radiation) or particle (e.g. alpha radiation or beta radiation) to become more stable. The time in which radionuclides becomes stable can range from seconds to billions of years. Long-lived radionuclides, such as uranium and thorium, have always been present within the Earth's crust and within the tissues of all living species. Material that contain radionuclides in natural form is known as Naturally Occurring Radioactive Materials, or commonly referred to as "NORM" and contribute to background radiation levels. Examples of NORM include sands, clays and soils, rocks, coal, groundwater, oil and gas, as well as, metal ores and non-metal minerals.

Many radionuclides within NORM may become concentrated or exposed to the accessible environment as a result of human activities such as manufacturing,

mineral extraction, or water processing. This is known as Technically Enhanced Radioactive Material or "TENORM." The term "technically enhanced" means that radiological, physical, and chemical properties of the radioactive material have been concentrated or further altered by having been processed, or beneficiated, or disturbed in a way that increases the potential for human and/or environmental exposures.

When companies began extracting precious metal and/or rare earths material from ore, companies had little suspicion that the principal minerals being mined or processed contained TENORM in the waste and/or product of the material being extracted. As a result, radioactive waste at mines and mineral processing/manufacturing facilities was often regarded as non-hazardous material and was disposed of improperly. Certain companies saw opportunities to recycle waste within their area as fill material for projects including road construction and parking lots. The Site is one location where contaminated fill material was used to construct the parking lot.

Terminology

To evaluate land and/or buildings potentially contaminated with radioactive materials, a variety of instrumentation must be used. When performing a scoping survey, the extent of contamination (i.e. how widespread is the contamination on the Site), as well as, the intensity of radiation (i.e. which areas/locations contribute to the greatest risk or dose) must be identified. Hand held and portable equipment such as a sodium iodide detectors, Geiger Mueller counters, proportional detectors, and/or ion chambers may be used as a field equipment to determine the extent of contamination and/or dose or exposure rates due to gamma radiation. In general, most of these pieces of equipment are used qualitatively and the data are compared to background readings to determine the extent and intensity of contamination, in addition to, answering if further investigation is needed. Examples of units used for qualitative measurements at the Site include counts per minute (cpm) for contamination, micro-Roetgen per hour (μR/hr) for exposure rate, or millirem per hour (mrem/hr) for dose rate measurements.

In most cases, the equipment used to collect qualitative measurements may not give an accurate or precise quantity of contamination due to poor efficiencies for specific radionuclides, poor geometries due to the instrumentation setup, and fast counting time. Qualitative measurements should always be paired with quantitative data when characterizing a site contaminated with radioactive materials. Quantitative data can be used to verify or correlate the qualitative instrumentation reading to quantitative soil sampling. This is commonly referred to as "ground truthing". Examples of quantitative measurements are samples, such as air, water, sediment, soil, and/or vegetation, taken from areas of known or suspected contamination and analyzed by a laboratory. The units for quantitative measurements are in units of picoCuries per gram (pCi/g). For the Site cleanup, only quantitative measurements are used to give definitive results and to verify cleanup has been completed.

Risk Calculation

Since removal actions are not a part of the remedial program, removal is not mandated to meet the risk requirements of 10^{-4} to 10^{-6} for site cleanups. However, in recent years,

EPA has encouraged removal cleanups to meet, at a minimum, the remedial cleanup values associated with the 10^{-4} carcinogenic risk based on the reasonable maximum exposure for an individual. To determine if contamination levels exceed the cancer risk of 10^{-4} (i.e. 1 in 10,000 of cancer), a risk assessment must be performed. EPA's Preliminary Remediation Goal (PRG) Calculator was created to help calculate risk vs. cleanup levels for various receptors taking into consideration exposures from all potential pathways, and through all media (e.g., soil, ground water, surface water, sediment, air, structures, etc.).

Site Assessment

From September to December 2013, the EPA Pre-Remedial Program conducted radiological surveys of the exterior areas of the Site. See Attachment C for the results of the gamma survey. The highest gamma radiation screening results were recorded from the exposed soil area of the rear, northern portion of the 9540 Niagara Falls Boulevard property. In December 2013, EPA also documented areas of observed contamination at the Site by measuring gamma radiation exposure rates and comparing these rates to site-specific background rates. An area of approximately 168,832 square feet (ft^2) was found to have gamma radiation levels that exceeded two times the background measurement.

To further quantify the contamination at the Site, in December 2013, a total of 16 soil samples, including one environmental duplicate sample, and three slag samples were collected from 15 boreholes throughout the main footprint of the Site using hollow-stem auger drilling methods. Two soil samples were collected on the adjacent First Assembly Church property to document background conditions. Analytical results indicated concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions. The maximum concentration of the radionuclides of concern were Radium-226 (Ra-226) at 199 picocuries per gram (pCi/g), and Radium-228 (Ra-228) at 807 pCi/g.

A screening risk assessment was conducted to calculate risk estimates using exposure rate data from the site and evaluating exposure pathways. Based on this screening, it was determined that there was an increased lifetime cancer risk above the acceptable risk range and that a removal action was necessary. Further assessment was warranted to determine the extent of the contamination and the scope of work necessary to address the exposure.

Between July and August 2015, the EPA Region 2 Removal Program conducted further radiological assessment of the interior and exterior of the Site. The goal for this assessment was to determine the extent of contamination at the Site, as well as to determine whether workers at the Site were being exposed to elevated levels of radon/thoron or loose contamination. As reported by the Pre-Remedial Program, the office area and warehouse space located at 9540 Niagara Falls Boulevard showed elevated readings of gamma radiation roughly 25 times higher than background. Specific sections of the 9524 Niagara Falls Boulevard also exhibited elevated gamma radiation levels; the gamma survey readings were as high as four times background in the walk-in cooler of the building and 6 times background in the north end rear vestibule. The exterior area of the Site showed the highest elevation of contamination at roughly 30 times background.

In August 2015, EPA Region 2 Removal Program took a total of 16 soil samples including one environmental duplicate sample. Fifteen boreholes were excavated and soil samples were collected throughout the perimeter of the Site using hollow-stem auger drilling methods. See Attachment D for soil sample results of Pre-Remedial Assessment and Removal Site Evaluation (RSE) Assessment. The other samples were soil samples collected on the adjacent First Assembly Church property to document background conditions. Per the 2015-2016 EPA RSE data, the maximum concentrations of the radionuclides of concern in the outdoor samples were Ra-226 at 4.60 pCi/g and Ra-228 at 13.6 pCi/g. The extent of depth of contamination was determined to be at a two foot depth where the majority of elevated exposure rates was due to the slag located in the first foot depth of the exterior surface.

In March 2016, EPA Region 2 Removal Program took a total of 118 soil samples (which included six environmental duplicate samples) from fourteen boreholes within the Greater Niagara Building Center (GNBC) building located at the Site. A sample was collected every six inches for a total of eight samples per borehole (Depth range 0-48 inches). The maximum concentrations of the radionuclides of concern in the GNBC indoor samples were Ra-226 at 126 pCi/g and Ra-228 at 438 pCi/g. The results indicate that the contamination is located within the first foot of depth. See Attachment F for GNBC indoor soil sample results.

To determine if contamination levels exceed the cancer risk of 10^{-4} (i.e. 1 in 10,000 of cancer), [1] a risk assessment was performed. EPA's PRG Calculator was created to help calculate risk versus cleanup levels for various receptors at the Site, taking into consideration exposures from all potential pathways and through all media (e.g., soil, ground water, surface water, sediment, air, structures, etc.). The most conservative receptor used for determining the cleanup values for the removal was a composite worker whose daily duties included both indoor and outdoor activities. The cleanup value established for the Site, based on an increase of 10^{-4} cancer risk, are:

Radium-226 at levels in excess of 2.48 pCi/g
Radium-228 at levels in excess of 15.90 pCi/g

[1] 40 CFR § 300.430(e)(2)(i)(A)(2) provides: "For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6} using information on the relationship between dose and response." See also, "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" (OSWER No. 9200.4-18, August 22, 1997) (providing clarification for establishing protective cleanup levels for radioactive contamination at CERCLA sites).

3. Physical location

The main addresses associated with the Niagara Falls Boulevard Site are 9524, 9540, 9547 & 9626 Niagara Falls Boulevard in Niagara Falls, Niagara County, New York. The Site is comprised of multiple parcels. Specifically, 146.18-1-17, 146.18-2-4, 146.18-2-5, 146.18-2-7, 146.19-3-1, 146.19-3-2, 146.19-3-3 and 146.19-3-4. The Site is located in a mixed commercial and residential area of Niagara Falls and encompasses approximately 2.53 acres of land. The Site is bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area. See Attachment A for map of the Site. Sensitive areas identified around the Site are as follows:

- First Assembly of God Inc. Church adjacent, to the Site, to the east.
- Niagara Falls Memorial Medical Center (five miles west).
- Niagara Rehabilitation and Nursing Center (5 miles west).
- Heritage Manor of Niagara Nursing Home (2.5 miles south west).
- Schools: Geraldine J Mann School (0.3 miles south), Catholic Academy of Niagara Falls Elementary School (0.9 miles southwest).
- Childcare: Niagara Falls Boys And Girls Club, Inc. (0.3 miles south), Small World Too, Inc. (0.9 miles southeast).
- Freshwater Forested/Shrub wetlands borders the site to the north. The Buffalo Niagara Riverkeeper have proposed plans with the current property owner and the Town of Niagara to restore and protect this area and create a park.
- Raw Water Intake from Niagara River (2.5 miles south west).Waterways: Cayuga Creek (1500ft), Niagara River (1.5 miles northwest), Bergholtz Creek (0.5 miles south).

4. Site Characteristics

The 9524 Niagara Falls Boulevard property is currently owned by 9524 Niagara Falls Boulevard LLC. The parcel contains a building that is operated as a bowling alley by the Rapid Bowling Center (RBC) and an asphalt parking lot that adjoins the northern, southern, and eastern sides of the RBC building.

The 9540 Niagara Falls Boulevard property is currently owned by 9540 Niagara Falls Boulevard LLC. This parcel contains a building operated by the GNBC, a building supply business. In addition, the parcel contains an asphalt parking lot, which surrounds the GNBC building and is a continuation of the parking lot on the adjacent 9524 Niagara Falls Boulevard property. To the east of the GNBC building and the parking lot, there is a worn-down concrete padded area that is crumbling and contains patches of overgrown grass.

The removal action (RV1) documented in this Action Memorandum will be the first CERCLA removal action undertaken at the Site.

5. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

The release and threat of release of the contaminants Ra-226 and Ra-228 into the environment may impact the health of the public at the Site through a variety of pathways, including inhalation from dusts and gases; ingestion from dusts, soils, and water; and direct radiation from external doses of alpha, beta, and gamma radiation from a particulate radioactive material. Workers of RBC and GNBC, as well as passersby, patrons, merchants, and other members of the public at or near the Site are exposed to contamination via routes of inhalation or dermal contact to loose soils and windblown dust in the parking areas and indoors.

Hazardous Substances Statutory Source for Designation Under CERCLA:

Radiological Substances Identified	Maximum Concentration
Radium 226 (Ra-226)	199 pCi/g
Radium 228 (Ra-228)	807 pCi/g

Each of the radiological substances listed above are listed in 40 CFR 302.4, List of Hazardous Substances and Reportable Quantities, Appendix B – Radionuclides. The statutory source for designating radionuclides as a hazardous substance under Section 102(a) of CERCLA, 42 U.S.C. § 9602(a), is Section 112 of the Clean Air Act, 42 U.S.C. § 7412.

6. National Priorities List status

The Site is not listed on the National Priorities List (NPL). In June 2014, the Pre-Remedial Program determined that the Site did not score high enough on the Hazardous Ranking System (HRS) to be added to the NPL.

7. Maps, pictures, and other attached documents

Attachment A: Site Location Map
Attachment B: Picture of Sampling Locations in 2006
Attachment C: Gamma Survey of the Site
Attachment D: Pre-Remedial and Removal Action Assessment Outdoor Soil Data
Attachment E: Proposed Excavation Area
Attachment F: Removal Action Assessment GNBC Indoor Soil Data

B. Other Actions to Date

1. Previous actions

No previous actions have been taken by any federal, state, or local government entity or private party to address the hazardous substances located at the Site. All federal and State actions to date have been in the form of assessment activities.

2. Current actions

Starting on June 2, 2016, the OSC, USEPA ERT Health Physicist, Weston and Guardian Environmental Services mobilized at the NFB Site. The following removal activities were conducted at the time of creation of this document:

- Wooded area vegetation was cleared and gamma scanned for staging areas.
- Equipment/laboratory/personnel trailers and material staging containers were mobilized.
- An internal storage room for GNBC supplies was constructed. This area was needed to relocate supplies from the GNBC Southwest Office that the business utilizes on a daily basis.
- Deconstruction of the internal non-load bearing walls of the Southwest Office walls in preparation for floor removal.
- Cutting, removal and staging of all concrete flooring in the GNBC Southwest Office Area.
- Removal and staging of approximately ten cubic yards of hazardous substance from the GNBC Southwest Office Area.

C. State and Local Authorities' Role

1. State and local actions to date

In September through October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both Site parcels using Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard, which were constructed directly on top of the asphalt parking lot after the construction of the other structures on the parcel, interior radiation levels were generally at background level. Within the newer office area and storage space, the highest reading was roughly seven times higher than background. Exterior readings taken at waist height at 9540 Niagara Falls Boulevard indicated elevated radiation levels at a fenced area behind the GNBC building. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property, the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the GNBC and RBC buildings. Two biased samples of slag confirmed contamination from locations that exhibited elevated static Ludlum detector readings. One of the samples was collected from an area of loose blacktop and indicated readings of approximately 171 times greater than background. See Attachment B for a picture of the sample location. The other samples were obtained from a slag pile located in a marshy area north of the parking lot that indicated readings over 200 times greater than background.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed elevated radiation levels with a hand-held PIC unit around an area of broken asphalt and from a soil pile containing slag at the NFB Site.

2. Potential for continued state/local response

Neither NYSDEC, NYSDOH, nor the local government have resources available to conduct a removal action at the Site. NYSDEC and NYSDOH referred the Site to EPA on July 21, 2013. These entities will act in a supporting role throughout the removal action.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

Due to the release and the threat of future releases of hazardous substances, namely Ra-226 and Ra-228, to the environment at the Site, current site conditions meet the criteria in the NCP for a CERCLA removal action under 40 CFR § 300.415(b)(2).

A. Threats to Public Health or Welfare

Section 300.415(b) of the NCP states:

> "At any release . . . where the lead agency makes the determination, based on the factors in paragraph (b)(2) of this section, that there is a threat to public health or welfare of the United States or the environment, the lead agency may take any appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release."

Factors from Section 300.415(b)(2) of the NCP that support the need for a removal action at the Site are discussed below.

Section 300.415(b)(2)(i)—Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants:

The Site contains two active businesses, RBC bowling alley and the GNBC supply business. These operations expose specific populations to the Ra-226 and Ra-228 contamination. Populations with increased cancer risk due to internal or external exposure to contamination are known as "receptors." Based on the compiled EPA Pre-Remedial Assessment and EPA RSE data, the receptors most likely to be exposed to the hazardous substance of radiation at the Site are:

Outdoor workers:

An outdoor worker who is employed full-time could come in contact with the hazardous substances while working on-site conducting outdoor maintenance activities throughout the day. The worker may be exposed long-term to the on-site surface soil contamination during the work day while performing tasks such as moderate digging or landscaping. The outdoor worker could be exposed to the contamination via the following pathways: incidental ingestion of soil, external radiation from contamination in soil, and inhalation of fugitive dust. According to a survey submitted to EPA by RBC, there are three outdoor RBC personnel that currently work at the Site.

Indoor workers:

An indoor worker at the RBC or GNBC buildings may come in contact with contamination through ingestion of contaminated soils that have been incorporated into indoor dust, external radiation from contamination in soil, and the inhalation of contamination present in indoor air. According to a survey submitted to EPA by RBC, there are twenty-eight indoor RBC personnel that currently work at the Site.

Recreators:

A recreator may spend time outside performing recreational activities on the Site. Recreators may come in contact with, or be exposed to, the contamination for short periods of time over a long term. A recreator would consist of any patrons of either RBC or GNBC that spend time in the parking lot areas. There are also historical accounts and evidence of local teenagers hanging out for extended periods of time at night in the northeast corner of the parking lot at 9524 Niagara Falls Boulevard. The radiological sampling and survey results in this area showed some of the most elevated levels in the assessments.

Construction workers:

Construction workers may come in contact with or be exposed to contamination short-term during the work day while working around vehicles that suspend dust in the air. Activities such as trenching and excavating typically involve on-site exposures to surface soils. The construction worker could be exposed to contamination via the following pathways: incidental ingestion of soil, external radiation from contamination in soil, and inhalation of fugitive dust.

Section 300.415(b)(2)(ii)—Actual or potential contamination of drinking water supplies or sensitive ecosystems

North of the parking lot at the Site is an overgrown wetland area with vegetation, which is referred to as "the marsh." The marsh flows to the Cayuga Creek. If the hazardous substances at the Site migrate to the marsh, Cayuga Creek may be impacted. Cayuga Creek is a tributary to the Niagara River and originates in the Niagara Escarpment in the Town of Lewiston. The Creek is the site of intense efforts by a local organization, Buffalo Niagara Riverkeeper, to restore it and protect it as a resource. Efforts include stream bank stabilization, reduction of pollutants entering the creek, and education of adjacent homeowners and businesses.

Section 300.415(b)(2)(iv)—High levels of hazardous substances or pollutants or contaminants in soils, largely at or near the surface that may migrate:

Ra-226 has been detected in surface soils at levels as high as 199 pCi/g and Ra-228 has been detected in surface soils at levels as high as 807 pCi/g. Radium-contaminated soils may migrate through airborne dust, surface runoff, construction activities, and foot traffic into the existing buildings on-site and/or into homes and residential areas. Since radium has a long half-life (approximately 1600 years), it is highly probable that the Site will undergo physical changes before the radium on-site will decay to background. Building demolition and/or construction may result in increased exposures to humans from the contamination becoming suspended or airborne. Weathering and/or animal interaction may also cause contamination to migrate. The fenced-in area on the northeast side of the asphalt parking lot is a brushy area and has evidence of trespassing by teenagers who use this area as a local hangout. Public visitors, patrons, and/or trespassers at the Site could cause a fire that could result in releasing the hazardous substances into the air. In addition, a fire within either of the buildings located on the Site could result in the generation of smoke containing radioactive materials that could migrate off-site into neighboring residential and commercial areas, causing widespread contamination and increased exposure to gamma, and alpha and beta emitting radionuclides.

Section 300.415(b)(2) (vii)—The availability of other appropriate federal or State response mechanisms to respond to the release:

The State of New York does not currently have the resources needed to take timely and appropriate action to respond to the threat posed by the presence of hazardous substances at the Site.

B. Threats to the Environment

At this time there is no documentation to indicate that the Site would acutely impact any sensitive environments or natural resources. However, the contaminated soils will continue to spread through migration via surface water runoff, human and animal activities, and wind, and have the potential to contaminate the wetland areas surrounding the Site.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

A. Emergency Exemption

1. There is an immediate risk to public health or welfare or the environment.

Continued response activities beyond 12 months will be required to complete the necessary removal action to mitigate the threats posed by this Site. The funding for this removal action will also require an exemption to the statutory limits of $2 million. Conditions at the Site and the proposed actions meet the criteria for an emergency exemption as specified in Section 104(c) of CERCLA, 42 U.S.C. § 9604(c). The Ra-226 and Ra-228 contamination at the Site poses immediate risks to public health and the environment, and continued response activities are immediately required to mitigate the release or threat of release of hazardous substances at the Site. Neither the State, nor the local government can adequately address the hazardous substances at the Site in a timely manner.

2. **Continued response actions are immediately required to prevent, limit, or mitigate an emergency.**

The radioactive materials impacting the Site are Ra-226 and Ra-228. The maximum concentrations of these materials at the Site are 199 pCi/g and 807 pCi/g, respectively. These radionuclides pose an immediate risk to public health, welfare and the environment. As described above, to achieve the carcinogenic risk value of 10^{-4}, removal activities must continue until the following levels are reached:

Radium-226 at levels in excess of 2.48 pCi/g
Radium-228 at levels in excess of 15.90 pCi/g

Should the planned removal activities for the Site not be completed, the public will continue to be exposed to unacceptable radiation levels from the Site.

3. **Assistance will not otherwise be provided on a timely basis.**

Other federal, state, or local response mechanisms and resources are not available to respond to the release and/or threat of release of hazardous substances, contaminants, or pollutants from the Site in a timely manner. Both the State and local government lack the necessary resources to perform a response at the Site.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

The objective of the removal action is to eliminate the threat of exposure to hazardous substances present both inside and outside the buildings at the Site. The EPA will mobilize the Emergency and Rapid Response Services (ERRS) contractor to the Site and will complete the following:

1. **Proposed action description**

a. Material contaminated with Ra-226 above 2.48 pCi/g and/or with Ra-228 above 15.90 pCi/g will be removed, temporarily staged, analyzed for disposal, transported and disposed of at a designated disposal facility. Transportation, treatment, storage, and disposal of hazardous substances will be performed in accordance with all applicable local, State, and federal requirements, and off-site disposal will comply with the CERCLA Off-Site Rule, promulgated pursuant to CERCLA § 121(d)(3), 42 U.S.C § 9621(d)(3), and codified at 40 CFR
§ 300.440.

b. Designated Areas for Mitigation:

- The asphalt parking lot
  - There is minimal shielding provided by the asphalt and there are breaches throughout the parking lot that exhibit even higher readings of gamma radiation and provide a greater chance of airborne material to migrate.
- The surrounding woods
  - The contaminated material has been deposited well beyond the asphalt parking lot.
  - There are signs of the public spending time in these wooded areas (bottles, trash, makeshift seating areas, fire pits).
- Sections of the RBC building
  - Certain sections of the RBC building were constructed after the contaminated fill was deposited and these sections are located on top of the radioactive contamination.
    - The northern vestibule.
    - The walk-in cooler located on the southwest side of the building.
    - Other areas as identified during removal.
- Sections of the GNBC building
  - Certain sections were constructed after the contaminated fill was deposited and these sections are located on top of the radioactive contamination. Some of the main areas are identified below:
    - Office area added to the southwest side of the building.
    - The northern warehouse (Warehouse #3) of the building.
    - Sections of Warehouse #2.
    - Other areas as identified during removal.

c. Interior Contamination: Identified indoor areas will be addressed by removal of the concrete flooring and excavation of the underlying contaminated fill. There are no plans to demolish the structures of the buildings at the Site. Some walls may be temporarily removed in order to allow access to equipment. All altered structures will be reconstructed. After removing the contaminated material from the affected areas, the material will be staged in secured structures.

d. Exterior Contamination: EPA Pre-Remedial and EPA Removal Programs observed the radioactive top fill layer to generally range in thickness from 0.5–2 feet. The footprint of the contamination area of concern is approximately 176,829 square feet. The approximate amount of contaminated material to excavate is 13,098 cubic yards. See Attachment E for map of proposed excavation area.

e. Contaminated material will be surveyed while the excavation is being conducted. Survey instrumentation will be used to determine if the soil is above or below the cleanup values established. Surveying will determine the initial depth of each excavation area and will assist in segregating and stockpiling contaminated material.

f. Soil samples will be collected from the stockpiled material for transportation and disposal. These soil samples will be sent out for laboratory analysis and to establish disposal profiles. Soil samples will also be collected from the top layers of each excavated area. These soil samples will be sent out for laboratory analysis to verify levels are below the established cleanup values and determine whether or not additional excavation is required. If needed, a statistical test (e.g. MARSSIM) will be used to determine if the Site has met the cleanup criteria.

g. The excavated material will be replaced with certified clean fill. Certified clean fill is soil that has been analyzed for Ra-226 and Ra-228, with results indicating that the concentration is at or below the established cleanup values and that all other hazardous substances and pollutants are at acceptable levels. Areas currently asphalted, concreted, sodded, or graveled over, will be replaced with asphalt, concrete, sod, or gravel, accordingly.

h. It is anticipated that there will be no need for post-removal site control at the conclusion of this removal action.

2. Contribution to remedial performance

The actions proposed in this Action Memorandum should not impede any future remedial plans or other response actions for the Site, although it is expected that no further response actions will be required at the Site.

3. Engineering evaluation/cost analysis (EE/CA)

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

4. Applicable or relevant and appropriate requirements (ARARs)

It remains EPA's policy that ARARs will generally be considered protective absent multiple contaminants or pathways of exposure. However, in rare situations, EPA Regional offices establish preliminary remediation goals (PRGs) at levels more protective than required by a given ARAR, even absent multiple pathways or contaminants, where application of the ARAR would not be protective of human health or the environment. It was determined that the Uranium Mill Tailings Radiation Control Act cleanup standard for Ra-226 and Ra-228, a subsurface soil cleanup level of 5 pCi/g, was not sufficiently protective of public health. Site-specific PRG numbers were calculated. The highest risk receptor, a composite worker whose daily duties include indoor and outdoor activities, was used in determining the most conservative value for cleanup levels at the Site.

5. Project schedule

The response activities described in the proposed action description above were initiated on June 1, 2016. EPA estimates the response activities will require 12 to 24 months to complete. This schedule is dependent on numerous factors including the cooperation of the tenants, favorable weather conditions and field conditions consistent with those encountered during the Site assessment, and the availability of approved off-site disposal facilities. Changes in any or all of these factors will have an impact on the project schedule.

B. Estimated Costs

A summary of estimated total costs for the removal action is presented below.

Extramural Costs:	**Funding Verbally Authorized May 13, 2016**	**Funding Verbally Authorized June 14, 2016**	**Requested Funding**	**Proposed Ceiling**
Regional Allowance Costs: Total cleanup contractor costs include labor, equipment, materials and laboratory disposal analysis (includes 20% contingency)	$500,000	$500,000	$5,748,000	$6,748,000
Other Extramural Costs Not Funded From the Regional Allowance: Technical support (RST2)	$100,000		$218,000	$318,000
Subtotal, extramural costs	$600,000	$500,000	$5,966,000	$7,066,000
Extramural Costs Contingency (10%)			$707,000	$707,000
Total Removal Project Ceiling	$600,000	$500,000	**$6,673,000**	**$7,773,000**

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances documented on-site, and the potential exposure pathways to nearby populations described in Section III.A., actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action described in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment.

VIII. OUTSTANDING POLICY ISSUES

There are no known outstanding policy issues associated with this Site at the present time. While there is a Headquarters consultation process in place for sites where radioactive contamination is present (Headquarters Consultation for Radioactively Contaminated Sites, OSWER No. 9200.1-33P, July 26, 2000), this consultation requirement applies only to sites where radioactive material will be managed on-site (e.g. capping, disposal cells) or where there is a potential national precedent-setting issue related to the radioactive materials. In this instance, the radioactive materials will not be managed in place and there is no potential national precedent-setting issue related to the radioactive materials. Therefore, Headquarters consultation is not required.

IX. ENFORCEMENT

EPA has conducted a preliminary Potentially Responsible Party (PRP) search for the Site. The OSC will work with the Removal Action Branch enforcement staff and the Office of Regional Counsel in an attempt to locate all viable PRPs to recover costs associated with this removal action.

The total EPA costs for this removal action based on the full-cost accounting practices that will be eligible for cost recovery are estimated to be $13,453,364.

Cost Type	Total Funding Requested in this Memorandum
Direct Extramural Cost	$7,773,000
Direct Intramural Cost (16%)	$1,244,000
Subtotal, Direct Cost	$9,017,000
Indirect Costs (Regional Indirect Cost Rate 49.2%)	$4,436,364
Estimated EPA Costs Eligible for Cost Recovery	**$13,453,364**

Note: Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

X. RECOMMENDATION

This decision document represents the selected removal action for the Niagara Falls Boulevard Site located in Niagara Falls, Niagara County, New York. This document has been developed in accordance with CERCLA and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal action. The total project ceiling, if approved, will be $7,773,000 of which $6,748,000 is for mitigation contracting. There are sufficient funds available in the FY 16 Advice of Allowance to initiate this response action. The balance of funds necessary to complete the response action will be available in our FY 17 Advice of Allowance.

Please indicate your formal approval of the funding request, the $2 million exemption, and a 12-month exemption for the removal action at the Niagara Fall Boulevard Site, as per current Delegation of Authority, by signing below.

APPROVED: _____ **DATE:** 9/27/16
Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

DISAPPROVED: _____ **DATE:** _____
Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

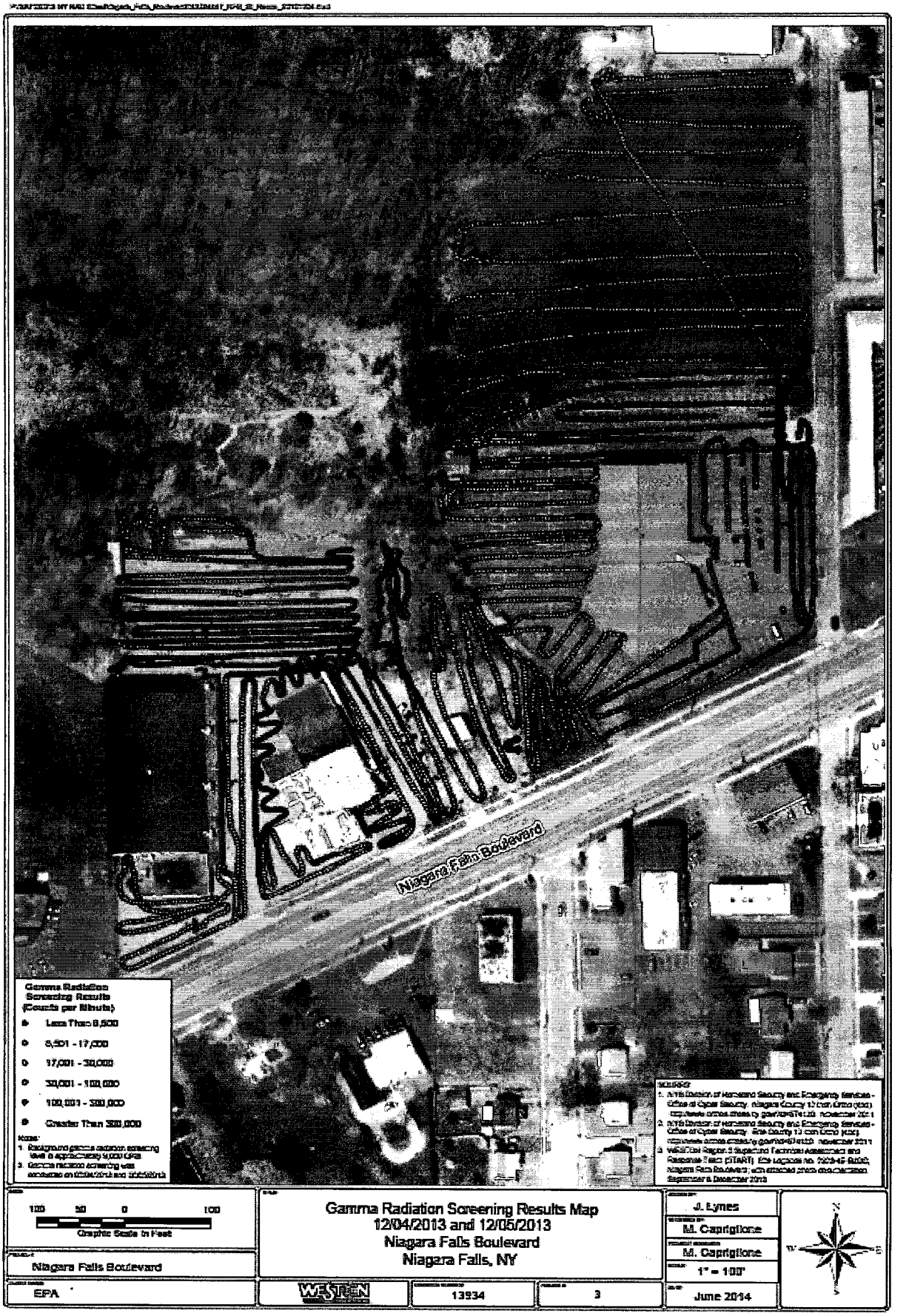
cc: J. Enck, RA
C. McCabe, DRA
W. Mugdan, ERRD-D
J. Prince, ERRD-DD
E. Mosher, ERRD-RPB
J. Daloia, ERRD-RPB
J. Rotola, ERRD-RAB
A. Carpenter, ERRD
B. Grealish, ERRD-RAB
D. Garbarini ERRD-NYRB
T. Lieber, ORC-NYCSFB
M. Ludmer, ORC-NYCSFB
M. Mears, PAD
K. Giacobbe, OPM-GCMB
T. Grier, 5204G
P. McKechnie, OIG
J. Quinn, NYSDEC
A. Raddant, USDOI
L. Rosman, NOAA
L. Battes, NYSEMO
S. Bates, NYSDOH
R. Craig, RST

Attachment A: Site location map

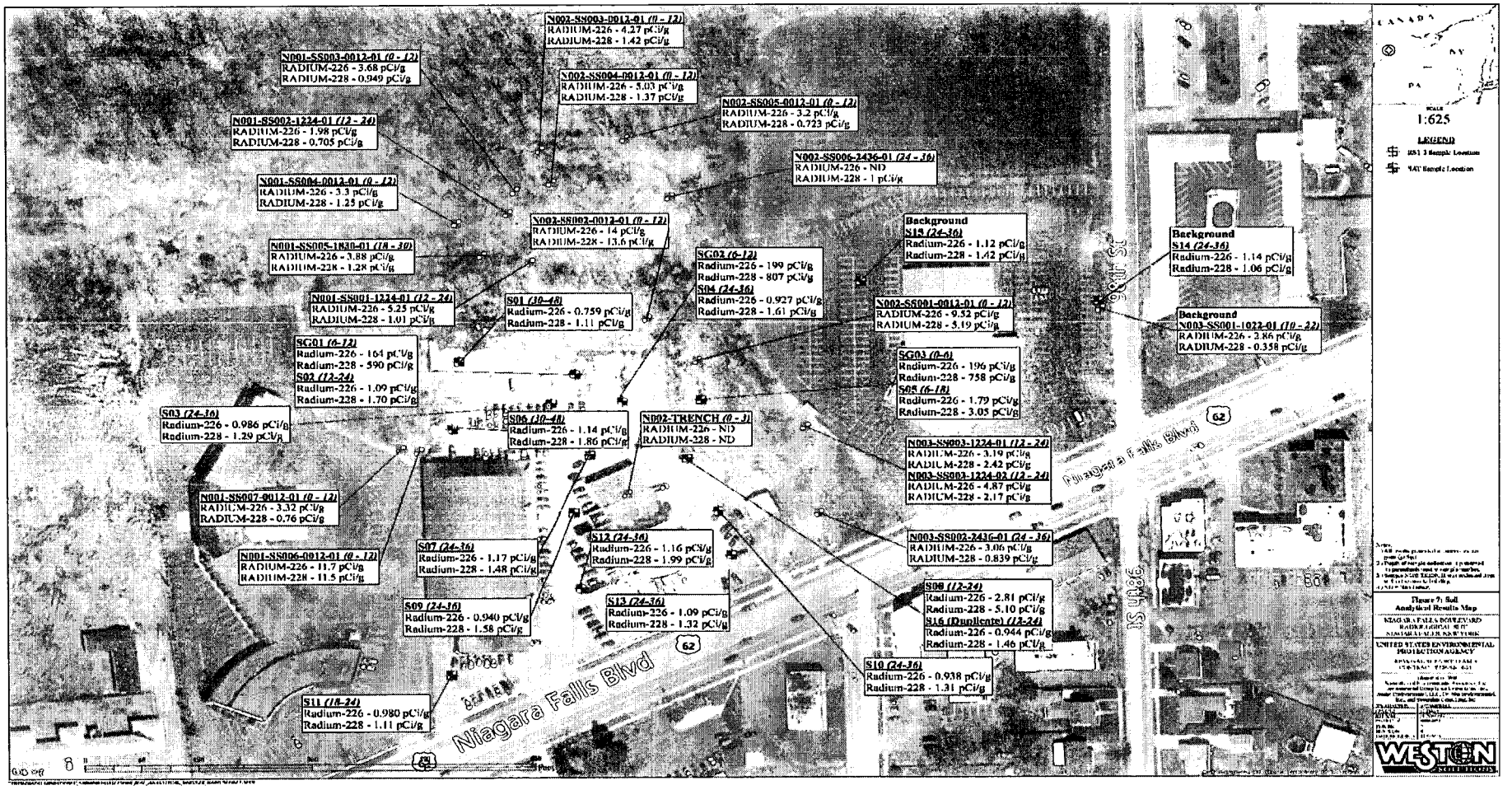
Attachment B: Picture of Sampling Locations in 2006

Marshy area behind 9524 Niagara Falls Boulevard.

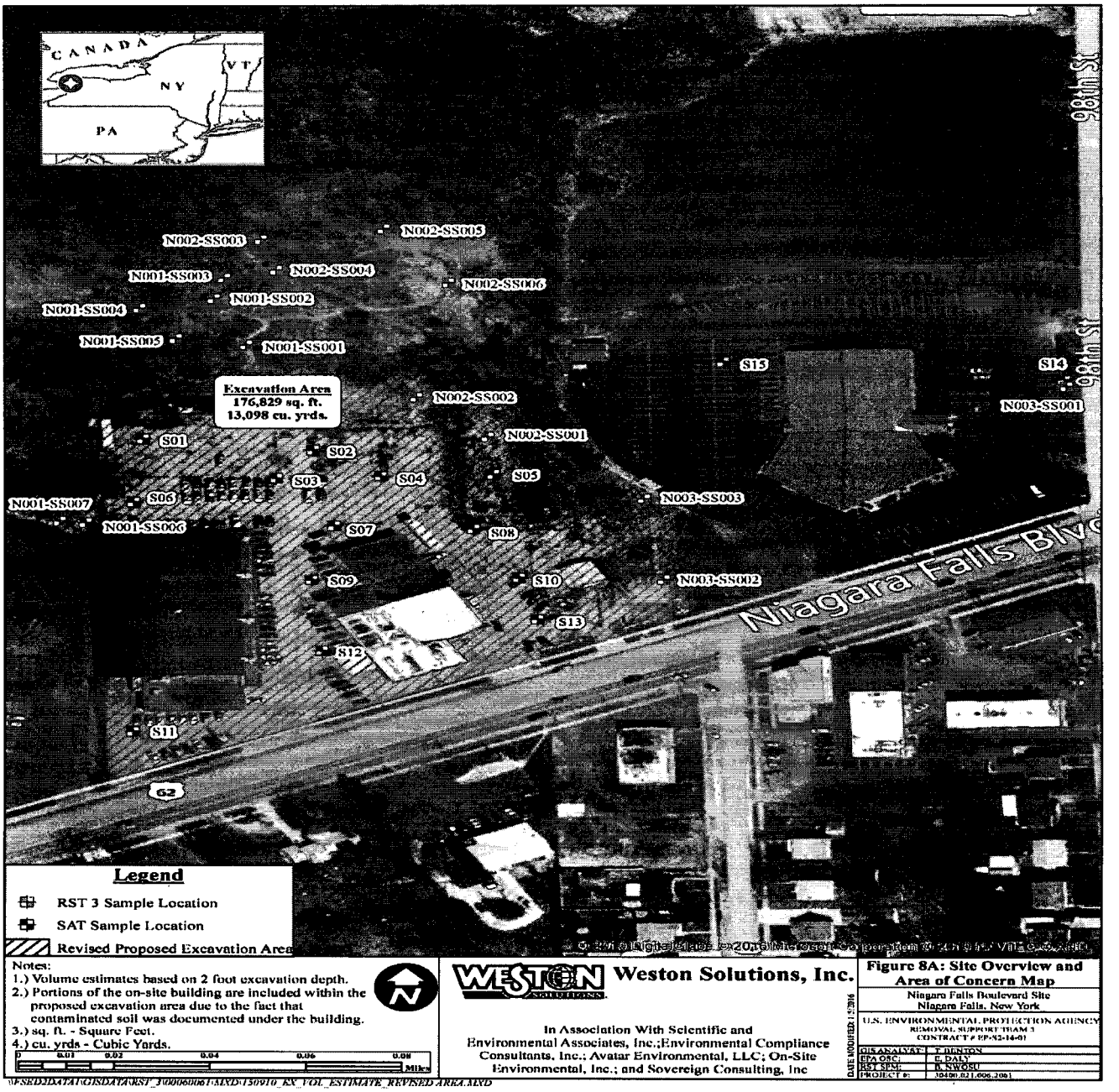
Attachment C: Gamma Survey of the Site



Attachment D: Pre-Remedial and Removal Action Assessment Soil Data



Attachment E: Proposed Excavation Area



Notes:
1.) Volume estimates based on 2 foot excavation depth.
2.) Portions of the on-site building are included within the proposed excavation area due to the fact that contaminated soil was documented under the building.
3.) sq. ft. - Square Feet.
4.) cu. yrds - Cubic Yards.

0 0.01 0.02 0.04 0.06 0.08 Miles

Weston Solutions, Inc.

In Association With Scientific and Environmental Associates, Inc.;Environmental Compliance Consultants, Inc.; Avatar Environmental, LLC; On-Site Environmental, Inc.; and Sovereign Consulting, Inc

Figure 8A: Site Overview and Area of Concern Map

Niagara Falls Boulevard Site
Niagara Falls, New York

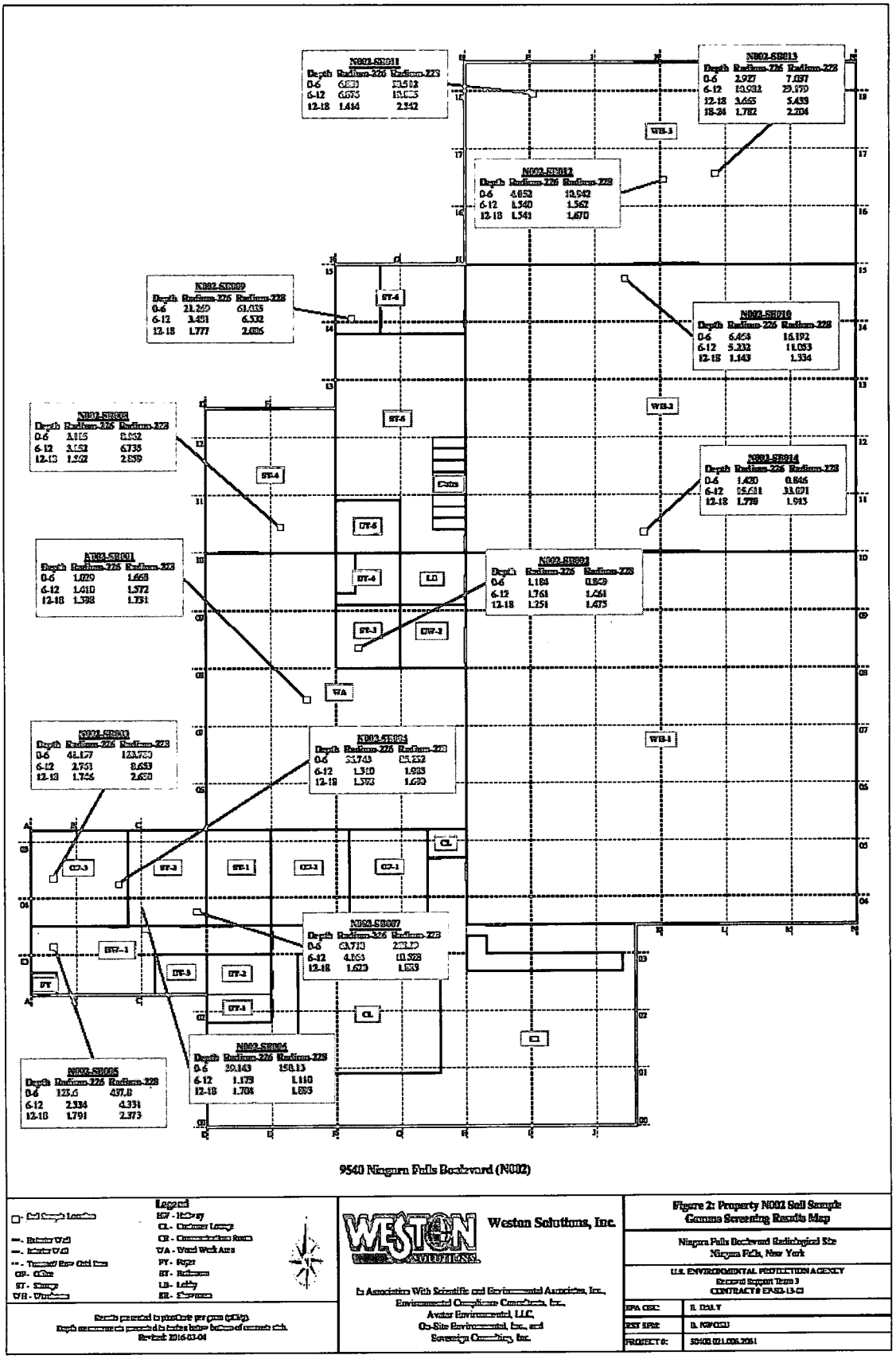
U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL SUPPORT TEAM 3
CONTRACT # EP-S3-14-01

GIS ANALYST:	T. BENTON
EPA OSC:	E. DALY
RST SPM:	B. NWOSU
PROJECT #:	20490.021.006.2081

DATE MODIFIED: 5/2016

\\FSED3\DATA\GIS\DATA\RST_3\00606061\MXD\150910_EX_VOL_ESTIMATE_REVISED AREA.MXD

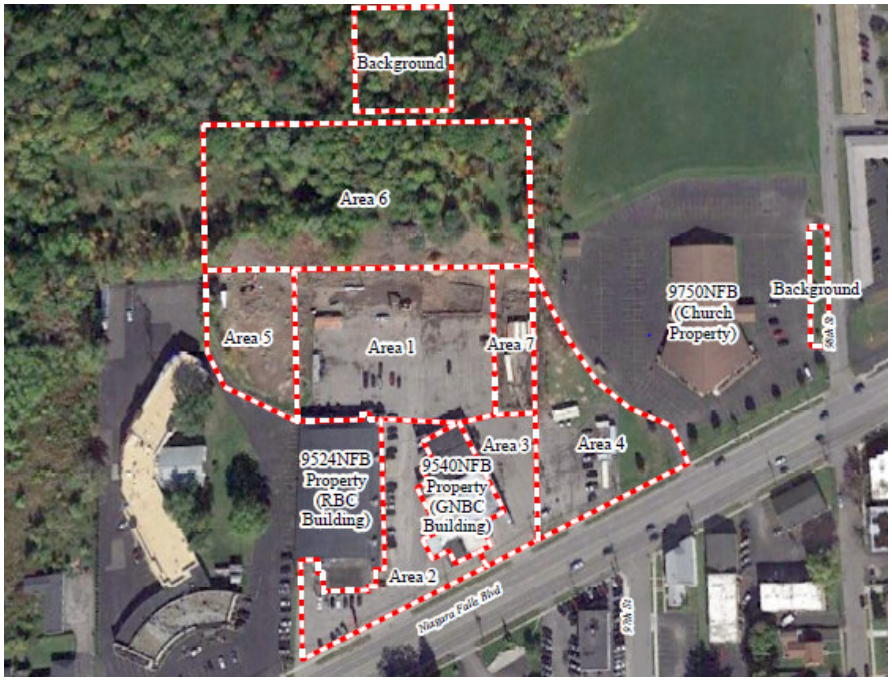
Attachment F: Removal Action Assessment GNBC Indoor Soil Data



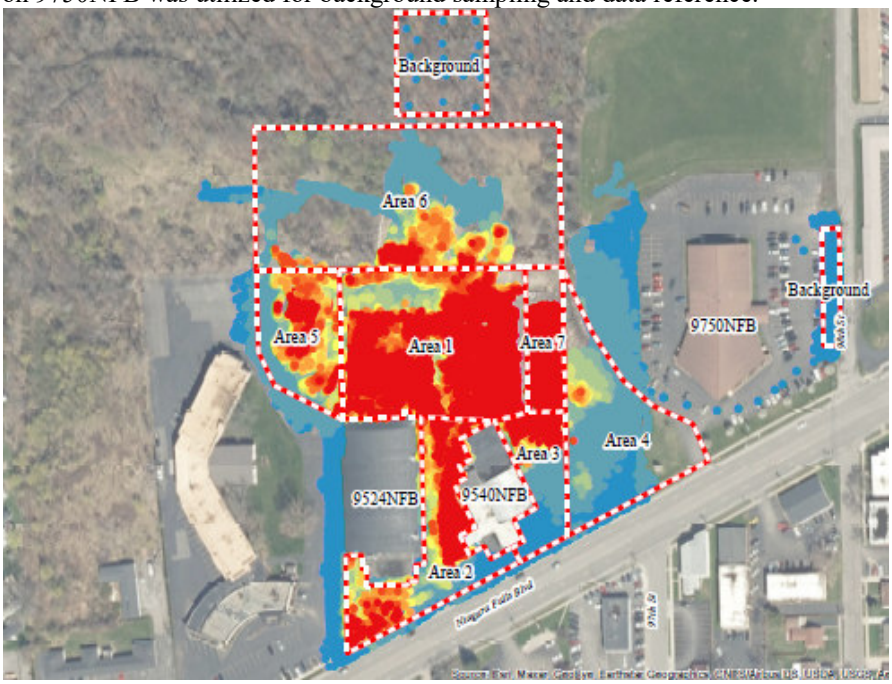
ATTACHMENT D

Photographic Documentation Log

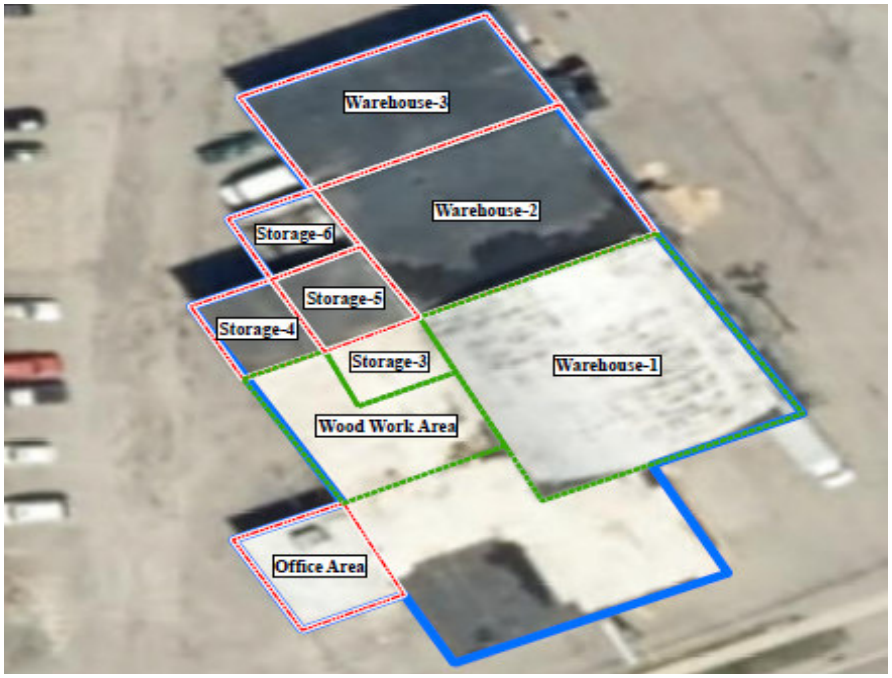
Photographic Documentation Log
Niagara Falls Boulevard Site
Niagara Falls, Niagara County, New York
May 26, 2016 to August 13, 2017



Photograph 1: The U.S. Environmental Protection Agency, Region II (EPA) with the support of its Removal Support Team 3 (RST 3) and Emergency and Rapid Response (ERRS) contractors conducted a Removal Action (RV1) at the Niagara Falls Boulevard Site (the Site). The Site consists of two parcels, 9524 and 9540 Niagara Falls Boulevard (NFB). 9524NFB is operated by Rapids Bowling Center (RBC) and 9540NFB is occupied by a hardware store, Greater Niagara Building Center, Inc. (GNBC). The First Assembly Church property (the Church Property) on 9750NFB was utilized for background sampling and data reference.



Photograph 2: Based on radiological survey data and for the purpose of executing RV1, the Site was divided into exterior areas of concern (AOCs) identified as Area 1 through Area 7 and interior AOCs were identified in 9540NFB GNBC building.



Photograph 3: For the purpose of executing RV1, the interior AOCs in the GNBC building were identified to include the GNBC Office Area, storage areas located in the rear of the GNBC building including Storage-4 (ST-4), portions of Storage-5 (ST-5), and Storage-6 (ST-6); and warehouse areas including Warehouse-2 (WH-2) and Warehouse-3 (WH-3).

Photograph 4: Prior to initiating removal activities at the Site, RST 3 performed baseline perimeter monitoring for PM_{10} (particulate matter smaller than 10 microns) using DustTrak particulate monitors and community air sampling using RADēCO volumetric air samplers. On a daily basis during removal activities in both interior and exterior AOCs, perimeter air monitoring and sampling was conducted.

Photograph 5: Core drilling was performed at locations selected by the EPA On-Scene Coordinator (OSC) in GNBC ST-3, GNBC ST-4, GNBC ST-5, GNBC Woodwork Area (WA), and the Church Property utility building from which concrete samples were collected. Locations where core drilling was performed were sealed after collecting concrete sampling.

Photograph 6: View of the demolition in the GNBC Office Area prior to excavation. Structural deficiencies that were not building-code complient were addressed before commencing excavation activities.

Photograph 7: The GNBC Office Area concrete floor was cut, removed from area, and scanned for radioactivity using Ludlum-2241 and 3x3 sodium iodide (NaI) scintillator.

Photograph 8: The ERRS contractor completed clearing and grubbing of vegetation at selected areas for staging the command post and office trailers, following which RST 3 conducted gamma survey of the cleared areas as well as the entire parking lot areas and Area 5. Gamma survey was conducted utilizing Ludlum-2241 and 3x3 NaI scintillator, which were mounted on an All-Terrain Vehicle (ATV) and connected to the EPA VIPER system (a wireless network-based communications system) to provide instantaneous real-time gamma readings through a computer server.

Photograph 9: View of RST 3 personnel filling the High-Pressure Germanium (HPGe) radiation detector with liquid nitrogen. The HPGe radiation detector was utilized on Site for soil sample analysis to determine the concentrations of radiological contamination for operational planning.

Photograph 10: Approximately 100 trees that were removed from Area 5 prior to excavation were assessed for off-site disposal. Prior to removing the trees, the coordinates of each tree was recorded using Global Positioning System (GPS) technology.

Photograph 11: The removed trees were assessed by scanning with Ludlum-3 and pancake probe and analyzing wood chips from the trees on-site using HPGe. Based on the assessment, it was determined that no radioactive material from Area 5 was taken up by the trees via the root system, absorbed into the trees, or adhered to the exterior of the trees. Subsequently, a local farmer opted to utilize them and began gradual removal of the tree trunks to his farm.

Photograph 12: View of a super sack containing contaminated soil being weighed in preparations for off-site transportation for disposal.

Photograph 13: All waste disposal trucks and trailers were scanned with Ludlum-2241 and 2x2 NaI Scintillator, and subsequently a Fluke Pressurized Ionization Chamber (FPIC) was utilized to perform confirmation screening of the trucks and trailers prior to departing the Site in order to ensure that the waste acceptance criteria (WAC) of the dispoal facility was met.

Photograph 14: View of backfilled portion of the GNBC Office Area after excavation of contaminated soil.

Photograph 15: View of ERRS personnel completing finishing touches to the new concrete floor slab in GNBC Office Area.

Photograph 16: View of ERRS personnel decontaminating a track dump truck (Morooka MST-800VD) prior to being demobilization from Site. Wipe samples were collected from all equipment after decontamination and analyzed on-site using Ludlum-3030 to verify that the equipment did not have any residual radiological material prior to leaving the Site.

Photograph 17: View of ERRS personnel conducting decontamination operations on a 350G excavator.

Photograph 18: View of a cubic yard box containing contaminated soil being weighed in preparations for off-site transportation for disposal.

Photograph 19: A construction subcontractor was awarded the contract to rebuild the GNBC Office Area, which included completing concrete cuts, plumbing, carpentry, electrical, HVAC, tiling, carpet installation and painting.

Photograph 20: View of ERRS personnel consolidating leftover soil/slag samples from the May 2017 Removal Assessment sampling event into a lined super sacks. Approximately, 2.25 tons of leftover soil/slag sample material from the May 2017 Removal Assessment event was shipped off-site to US Ecology in Belleville, Michigan.

Photograph 21: At the end of RV1 operations, all Conex boxes and office trailers were emptied, cleaned, and gamma surveyed, and wipe samples collected and analyzed with Ludlum-3030. Based on wipe sample analytical results, all Conex boxes and office trailers were cleared for radiation and removed off-site.

Photograph 22: View of leftover supplies that were stored on-site in GNBC WH-3 after the completion of RV1 activities. Due to funding limitation, EPA discontinued removal operation at the Site on July 13, 2017, with a view to continue work at the Site in the Spring of 2018.

ATTACHMENT E

EPA POLREPs

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep
Initial Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #4**
Initial Removal Action PolRep for Niagara Falls Boulevard Site
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 6/11/2016
Reporting Period: 05/26/2016 through 06/11/2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Removal Assessment and Removal Action

1.1.2 Site Description

The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway.

There were no radon or thoron concentrations that exceeded the site-specific background, nor were there any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

USEPA Pre-Remedial Program performed an assessment at the Niagara Falls Boulevard Site (NFB) in 2013-2014. Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.
May 31, 2106 through June 1, 2016, Public Affairs Official, Mike Basile, distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities.

On June 1, 2016, OSC Daly, EPA ERT Health Physicist (HP) Nguyen, Guardian Environmental Services (GES) and Weston mobilized for the initiation of the removal action. Equipment provided by USEPA Region 02, USEPA-ERT, Weston and Guardian Environmental Services.

From June 1st through June 5th the following tasks/events occurred:

- HP Nguyen and GES Health & Safety Officer brief team on radiological safety and overall site safety.
- HP Nguyen established instrumentation and procedural quality control.
- GES started construction of storage room in GNBC in order to relocate operator business literature and construction samples. This was performed in order to prepare for concrete/material removal from one of the designated areas floor.
- GES started the removal of above ground vegetation from the northern wooded areas of the Site. Sections of this area are preliminary designated for office and storage trailers.
- HP Nguyen, OSC Daly and Weston determined air monitoring strategies while ground vegetation removal was conducted. Multiple Radeco (gamma air sampler) and Dust Track (particulate monitor) instruments were deployed. As of the date of this report, no filter samples or monitor readings were observed above background levels.
- Weston conducted gamma survey of the cleared wooded areas as well as the entire parking lot areas of the property.
- Weston performed grid out of GNBC room ST-5 and performed thorough gamma survey.

From June 6th through June 11th the following tasks/events occurred:

- It was determined that the northern wooded areas exhibited elevated gamma levels and will not be used for trailer staging. This location selected for trailer staging is the south eastern part of the parking lot that exhibited predominately background gamma survey readings.
- The fenced in wooded area on the east side of the Site was cleared. This is an area with known elevated gamma survey readings. During the clearing process, the skid steer was monitored as was the abandoned tires that were removed from the area. No elevated gamma readings were observed.
- Office trailers, storage containers and roll-off containers were mobilized. Swipe samples were taken inside these units to document a radiological baseline for each unit. No radiological levels were above background. GES installed flooring (wooden layer and tile) in any trailer that did not have a floor covering to ensure the flooring is able to be cleaned and/or removed if contamination is present prior to demobilization.
- The storage room in the GNBC construction was completed.
- The removal of property owner material from Warehouse #3 was relocated to storage container in preparation for interior utility survey mark out.

  On June 10, 2016, reporter, Dan Telvock, from the Investigative Post visited the Site and conducted on camera interview with OSC Daly.

  On June 10, 2016, NYS DEC Regional representative visited and took a tour of ongoing activities at the Site.

USEPA has been coordinating with NYS, Niagara County and local representatives throughout the assessment/removal process.

2.1.2 Response Actions to Date

No removal of material has been conducted as of report date.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

2.2.1 Anticipated Activities

Utility mark out in designated interior areas of GNBC.

Start deconstruction of GNBC non-load bearing walls.

Start concrete cuts in designated areas cleared by utility mark out.

2.2.1.1 Planned Response Activities

Removal of contaminated material from below the concrete flooring of designated areas within GNBC building.

2.2.1.2 Next Steps

Action Memo finalization.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding for the Site in the amount of $600,000 to initiate the removal action.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$500,000.00	$0.00	$500,000.00	100.00%
TAT/START	$100,000.00	$0.00	$100,000.00	100.00%
Intramural Costs				
Total Site Costs	$600,000.00	$0.00	$600,000.00	100.00%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
EPA ERT Health Physicist Lyndsey Nguyen
Weston: Two Technician
Guardian: RM, FCA, 2 Operators, 1 Tech & H&S Officer

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #6**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 7/13/2016
Reporting Period: 06/24/2016 through 07/13/2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699**)**, hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

USEPA Pre-Remedial Program performed an assessment at the Niagara Falls Boulevard Site (NFB) in 2013-2014. Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

From June 24th through July 13th the following tasks/events occurred:

- OSC Daly, HP Nguyen, Weston (2) and Guardian (RM, FCA, 2 Operators and 1 Tech) mobilized to Site on June 24, 2016.
- Decontamination tent construction outside of GNBC Office Area.
- Exhaust system and chimney constructed in GNBC Office Area.
- Particulate air monitoring and Radeco air monitoring conducted in the GNBC Office Area as well as strategic locations within other area of GNBC building and exterior of the building during interior operations.
- Multi-Rae was monitoring interior air quality (CO2, Oxygen) within the interior work space of GNBC Office Area throughout operations.
- GNBC Office Area concrete floor was cut, removed from area, sections scanned for radiological scan with pancake probe and swipes taken prior to relocating to secure storage container. No indication of contamination have been observed. Concrete will be disposed of as non-hazardous once conformational laboratory analysis results received.
- The removal of the asphalt/slag layer of GNBC Office Area was initiated. Material was placed in cubic yard boxes. The boxes were sealed prior to leaving the interior space. In the decon tent the boxes were swiped and swipe samples analyzed prior to boxes being relocated to secure storage container.
- All personnel within the GNBC Office Area were in appropriate PPE and were scanned with pancake probe within the decon tent prior to removal of PPE to determine if any removable contamination is leaving the building. No above background readings were observed during activities during this report time range.
- On July 5, 2016, the Dan Telvock news report was released via newspaper, internet and Channel 2 news broadcast. This report covered potential/existing radiological sites within the Niagara County area. Some information was based on in-person interview with OSC Daly on June 10, 2016. Both Niagara Falls Boulevard and Holy Trinity Sites were mentioned in the news piece.
- There have been a few episodes of vandalism at the office trailer portion of Niagara Falls Boulevard Site located on 9626 Niagara Falls Boulevard. The portable toilets have been knocked over twice. More recently when the Site crew was off over the July 4th break (off on July 3rd and 4th). When OSC and crew returned to the site on July 5th both portable toilets were on their sides. The portable toilets are subcontracted by USEPA Contractor Guardian Environmental Services (GES). The portable toilet company informed GES that during our week break in June (June 17-23), the toilets were tipped then as well. A police report was filed with the Niagara Falls Police Department. On July 7th, police officers toured Site with OSC and obtained more information regarding the vandalism. On July 13th, motion sensor lights were installed in the office trailer area.
- On July 13, 2016, OSC Daly requested verbal increase of $1,400,000.00 for a total project ceiling of $2,000,000.00 to continue the emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.
- Late afternoon July 13, 2016, U.S. Senator Charles E. Schumer put out a press request to urge the U.S. Environmental Protection Agency (EPA) to conduct an updated and comprehensive assessment of the numerous radioactive hotspots in Niagara County and the Grand Island area. This request appears directly related to recent news reports covering the Niagara Falls Boulevard Site, the Holy Trinity Site and other areas of interest in Niagara County.
- The last day working on Site was July 13, 2016 for this tour.

2.1.2 Response Actions to Date

7 Cubic yard boxes of radiological contaminated material was removed from the GNBC Office Area and

staged in secured containers during this time period.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

2.2.1 Anticipated Activities

- Mobilize back on Site August 1, 2016.
- Stabilization of GNBC Office structure due to newly discovered inefficient roof support and suspect perimeter wall footers. The construction of this addition was not by code and necessary steps must be taken to stabilize structure in order to continue work. Permanent measures must be taken to bring this structure up to code.
- Continuation of the excavation and staging of contaminated material from GNBC Office Area.
- Begin removal of asphalt, excavation of contaminated material from specific sections of the parking lot and staging.
- Initiate excavation and staging of contaminated material from other internal spaces within GNBC structure.
- Post excavation sampling, analysis of GNBC Office footprint and other excavated areas.
- Backfilling of cleared excavated area with clean fill.
- Bid out transport and disposal of contaminated material.

2.2.1.1 Planned Response Activities

- Continuation of the excavation and staging of contaminated material from GNBC Office Area.
- Begin removal of asphalt, excavation of contaminated material from specific sections of the parking lot and staging

2.2.1.2 Next Steps

Action Memo finalization.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 13, 2016, OSC Daly requested verbal increase of $1,400,000.00 for a total project ceiling of $2,000,000.00 to continue the emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$500,000.00	$250,000.00	$250,000.00	50.00%
TAT/START	$100,000.00	$17,419.02	$82,580.98	82.58%
Intramural Costs				

Total Site Costs	$600,000.00	$267,419.02	$332,580.98	55.43%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
EPA ERT Health Physicist Lyndsey Nguyen
Weston: Two Technician
Guardian: RM, FCA, 2 Operators, 1 Tech & H&S Officer

5. Definition of Terms
No information available at this time.

6. Additional sources of information
No information available at this time.

7. Situational Reference Materials
No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #7**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
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Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 8/22/2016
Reporting Period: 07/14/2016 through 08/22/2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699**)**, hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

USEPA Pre-Remedial Program performed an assessment at the Niagara Falls Boulevard Site (NFB) in 2013-2014. Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

From July 14, 2016 through August 22, 2016 the following tasks/events occur

- On July 14, 2016, the deputy division director verbally authorized $500,000 in mitigation funding.
- OSC Daly, EPA ERT HP Nguyen, Weston (3) and Guardian (RM, FCA, 2 Operators and 3 Techs) mobilized to Site on August 1, 2016.
- GNBC Front Office-The construction of a new storage room in the GNBC building was completed. All business materials/showroom samples were relocated to that new room. The deconstruction of the front office and removal of the concrete flooring was completed. Excavation of the contaminated layer of asphalt/slag continued through this time range. This material was placed in cubic yard boxes and sealed within the office area. Then the boxes were swiped for removable contamination prior to leaving the decon area and transported to the storage container. Approximately 100 cubic yard boxes of material has been removed from the GNBC Front Office and relocated to secured containers at the time of this report.
- Preparation of Area 5 for excavation has commenced.
- On August 8, 2016, Niagara County Health Department representatives visited the Site.
- On August 16, 2016, OSC Daly contacted the City of Niagara Code of Enforcement to initiate meeting regarding the GNBC Office rebuild.
- On August 17, 2016, USEPA held a phone conference with NYSDEC regarding disposal of concrete at NYS landfill.

2.1.2 Response Actions to Date

Approximately 100 cubic yard boxes of material has been removed from the GNBC Front Office and relocated to secured containers at the time of this report.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

2.2.1 Anticipated Activities

- The crew will stabilize the GNBC Office structure due to inefficient roof support. Weston structural engineer has determined that the support for the roof was not up to code and therefore additional support poles will be installed.
- The crew will complete excavation and staging of contaminated material from the GNBC Office structure.
- Once the excavation of the contaminated layer in GNBC Office is completed, gamma survey of the excavated footprint will be conducted. Once the health physicist determines area passes gamma criteria, soil samples will be collected from the footprint for analysis. The lab analytical takes approximately four weeks for preliminary results. Once laboratory results are received and evaluated, it will be determined if backfilling with clean material can commence. Once backfilled, the concrete floor will be poured and the room constructed.
- A High-purity Germanium (HPGe) Detector is tentatively scheduled to be mobilized to the Site

the week of September 7, 2016. This will provide the technical team an “on-site lab” in which they can run soil samples in the field and allow the crew to backfill in a shorter period of time.
- The next proposed area for outside excavation will be the western wooded area near the Rapids Bowling Alley (Area 5). This is a remote area of the property and will allow the least amount of interference to the business operations/patrons. Once on-site lab set up and personnel trained, excavation of more sensitive areas will commence in coordination with business operators.
- GES will finalize bid for transport and disposal of contaminated material.

2.2.1.1 Planned Response Activities

- Continuation of the excavation and staging of contaminated material from GNBC Office Area if necessary and initiation of the Area 5 excavation.

2.2.1.2 Next Steps

Action Memo finalization.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$1,000,000.00	$387,494.91	$612,505.09	61.25%
TAT/START	$100,000.00	$71,261.33	$28,738.67	28.74%
Intramural Costs				
Total Site Costs	$1,100,000.00	$458,756.24	$641,243.76	58.29%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NYS DEC

NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
EPA ERT Health Physicist Lyndsey Nguyen
Weston: One Lead and Two Technician
Guardian: RM, FCA, 2 Operators, 3 Techs

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #8**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 9/27/2016
Reporting Period: 08/23/2016 through 09/27/2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699**)**, hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

From August 23, 2016 through September 27, 2016 the following tasks/events occurred:

- GNBC Front Office-Excavation of the contaminated layer of asphalt/slag was removed. This material was placed in cubic yard boxes or cubic yard super sacks. Approximately 115 cubic yard boxes/super sacks of material has been removed from the GNBC Front Office and relocated to secured containers at the time of this report.
- Removal of trees/vegetation from Area 5 continued through this time range and the tree/vegetation removal in Areas 1, 4 and 7 was initiated.
- On August 25, 2016, background soil area at northern Weber property gamma surveyed. The City of Niagara Falls Code Enforcement Officials visited the site and conducted initial walkthrough in GNBC Office Area in preparation for office area rebuild (electrical/plumbing/etc. permit compliance). Weston to subcontract architect for blueprints. C&D roll off with GNBC concrete transported off-site.
- On August 30, 2016, the NFB Action Memo was sent electronically to Tim Grier (HQ) from RAB Management.
- September 7th through 14th: Dave Kappelman (ERT) mobilized a High-Purity Germanium (HPGe) Detector to the Site. This was staged in the instrument trailer along with accessories. Dave will set up, perform calibration/QC on the instrument and eventually train staff on the instrument. Hot spots in GNBC Office Area identified and further excavation of material was needed. Utility mark out and core sampling conducted in First Assembly Church garage and GNBC ST-5 in preparation of pulling soil samples for analysis.
- On September 13th, EPA HQ consulted with Region 02 enforcement team. OSRE is comfortable with the region moving forward on this case. They consider the consultation to be complete. OSC Daly had phone conference with Site attorney regarding post removal site control language in the action memo. No site controls needed for this action. The paragraph was revised in the action memo and the document electronically forwarded to Tim Grier, ORC and RPB/RAB Management for final concurrence. The T&D bid responses were received for analysis.
- On September 14th, tree removal/vegetation removal was initiated in Areas 1 and 4. Core drilling was conducted in First Assembly Church garage and GNBC ST-5.
- On September 15th, soil samples obtained from GNBC to test run on Germanium Instrument. Soil samples were collected from First Assembly Church garage. Joe Rotola and Dan Harkay (EPA R2 RAB Management) visited the site. The large stump grinder mobilized on site.
- OSC Jimenez removal oversight from September 18th through September 23rd. Soil samples were obtained from GNBC ST-5, grinding of tree stumps in Areas 1, 4 and 5 has commenced, and a conference call was held with Weston IT for initial scoping of Site Viewer.
- On September 20th, GES conducted additional excavation of soil "hot spots" in GNBC Office Area. Weston gamma surveyed these specific areas and collected soil samples. The gamma data and soil sample analytical results will be compared to identify relationship between counts (cpm) and activity (piC/g). The soil samples will be analyzed on-site by HPGe Detector as well as sent out to the certified lab. So the relationship between the on-site and off-site labs will also be evaluated.
- On September 21st, freelance reporter Lou Ricciuti visited the site and was given an update on site activities by OSC Jimenez and HP Nguyen.
- On September 22nd and 23rd, post excavation soil samples were collected by Weston as per EPA ERT health physicist guidance. A total of 18 sample points were identified. These samples will be initially held until analysis by HPGe Detector is completed. The samples will be shipped to a certified laboratory if on-site analytical results pass HP established criteria.
- On September 27th, OSC was informed that the NFB Action Memo is in the OLEM immediate office and finalization is expected shortly. The subcontract for transport and disposal was granted by USEPA Region 02 Contractor Officer.

2.1.2 Response Actions to Date

- Approximately 115 cubic yard boxes/super sacks of material has been removed from the GNBC

Front Office and relocated to secured containers at the time of this report.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

2.2.1 Anticipated Activities

- Signing of action memo and additional funding allocation to continue the removal action.
- Review of architect blueprint for proposed rebuild of GNBC Office Area.
- Once soil sampling results are evaluated by the health physicists, it will be determined if backfilling with clean material can commence. Once backfilled, the concrete floor will be poured and the room constructed.
- Stump removal will continue in Areas 1, 4, 5 and 7.
- Soil sample certified analytical results for GNBC Office area, First Assembly Church garage and GNBC ST-5.
- GES award bid for transport and disposal of contaminated material once additional funding received.
- USEPA has been coordinating with NYS, Niagara County and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

- Excavation of contaminated material in Area 5.

2.2.1.2 Next Steps

Action Memo finalization.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$1,000,000.00	$602,009.33	$397,990.67	39.80%
TAT/START	$100,000.00	$100,000.00	$0.00	0.00%
Intramural Costs				

Total Site Costs	$1,100,000.00	$702,009.33	$397,990.67	36.18%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site
OSC Daly
OSC Jimenez
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman
Weston: One Lead and Two Technician
Guardian: RM, FCA, 2 Operators, 3 Techs

5. Definition of Terms
No information available at this time.

6. Additional sources of information
No information available at this time.

7. Situational Reference Materials
No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #9**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 10/22/2016
Reporting Period: September 28, 2016 through October 22, 2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699**)**, hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

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On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

From September 28, 2016 through October 22, 2016 the following tasks/events occurred:

- On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by EPA Headquarters Office.
- On September 29, 2016, $950,000 funding increase was received and applied to mitigation cost. All tree removal and stump grinding completed.
- OSC Jimenez overseeing removal operations at Site from October 3rd through October 7th.
- US Ecology was awarded the transport and disposal bid.
- An architect is needed to create blueprints for restoration of the GNBC Office Area. The bid was sent out to perspective architects on October 3, 2016. On October 11, 2016, representatives from four architect firms were given tour of GNBC Office Area. The bid responses were received on October 18th and October 19th the bid was awarded. The deadline for the blueprint is November 16th.
- Excavation has commenced in Area 5. Material is being separated by concentration. The higher concentration material is currently being put into cubic yard super sacks and stored in Conex Boxes.
- The High-Purity Germanium (HPGe) Detector is being utilized to analyze site soil samples in order to determine soil concentrations for operation planning.
- Selective samples are being sent out to the certified laboratory.
- Weston continues to push data layers to Weston IT lead for putting up on Site Viewer.
- OSC, EPA ERT health physicists and US Ecology held several meetings regarding the site disposal strategy proposal in reference to the facilities acceptance criteria. The draft proposal was sent to US Ecology on October 20, 2016.

2.1.2 Response Actions to Date

- To date, approximately 116 cubic yard boxes/super sacks of material have been removed from the GNBC Front Office and 107 cubic yard bags have been removed from Area 5. All material has currently been staged inside secured containers awaiting disposal strategy approval.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Waste Stream	*Medium*	*Quantity*	*Manifest #*	*Treatment*	*Disposal*

2.2 Planning Section

2.2.1 Anticipated Activities

- Review of architect blueprint for proposed rebuild of GNBC Office Area after bids are received.
- Once blueprints of GNBC Office Area are approved, subcontracting of electrical and plumbing work will be initiated.
- Once soil sampling results for the GNBC Office Area are evaluated by the health physicists, it will be determined if backfilling with clean material can commence. Once utilities are installed, the area will be backfilled and the concrete floor will be poured.
- GNBC Office Area framing, sheetrock and overall rebuild.

- Certified analytical results are expected for soil samples from GNBC Office area, First Assembly Church garage and GNBC ST-5.
- USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

- Excavation of contaminated material in Area 5.

2.2.1.2 Next Steps

- Disposal Proposal finalization

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.
On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$1,950,000.00	$1,421,214.00	$528,786.00	27.12%
TAT/START	$518,000.00	$141,014.00	$376,986.00	72.78%
Intramural Costs				
Total Site Costs	$2,468,000.00	$1,562,228.00	$905,772.00	36.70%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Jimenez
OSC Pellegrino
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman
Weston: One Lead and Two Technician
Guardian: RM, FCA, Two Operators and Three Techs

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #10**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 12/17/2016
Reporting Period: 10/23/2016 through 12/16/2016

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Removal Assessment and Removal Action

1.1.2 Site Description

The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore

containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

- On October 27, 2016, the soil sample results were received for the First Assembly of God Church garage. All samples came back at background levels. No elevated gamma survey readings were observed in the church parking lot, surrounding the garage or

inside the garage.

- On November 04, 2016, NYS DEC representatives, Tim Rice and Ken Martin, visited the Site.
- OSC, EPA ERT health physicists (Nguyen & Kappelman), GES, Weston and US Ecology held several meetings regarding the site disposal strategy proposal in reference to the facilities acceptance criteria. On November 17, 2016, US Ecology accepted the NFB Site overall disposal proposal and the specific disposal proposal for GNBC Office Area. However, TCLP data was required.
- On November 30, 2016, the Pace Lab preliminary soil data for Areas 1, 5 & 7 was received.
- On December 05, 2016, funding request submitted to RPB & RAB management.
- Excavation of the identified footprint in Area 5 was completed on December 12, 2016. Material has been separated by concentration. TCLP data was received for GNBC Office Area and Area 5. All results were under TCLP action limits.
- The architect blueprint for GNBC Office Area was finalized on December 13, 2016. Clean rock fill was transported to the site and stage in Area 5. In total, 30 trucks delivered 1,060.20 tons.
- On December 14, 2016, clean rock fill was transported to the site and stage in Area 5. In total, 34 trucks delivered 1,243.37 tons. Dan Telvock (Investigative Press) interviewed OSC Daly on camera. Mike Basile (US EPA Public Affairs) and Lyndsey Nguyen (ERT Health Physicists) were also interviewed off camera.
- On December 15, 2016, three trucks transported material from GNBC Office Area to US Ecology in Michigan.
- On December 16, 2016, the Area 5 Medium Concentration Material disposal proposal was approved by US Ecology.
- The High-Purity Germanium (HPGe) Detector is being utilized to analyze site soil samples in order to determine soil concentrations for operation planning.

2.1.2 Response Actions to Date

- To date, approximately 2,487 cubic yards (3,730.80 tons) of material has been removed from the GNBC Front Office and Area 5. All material has currently been staged awaiting disposal.
- Approximately, 58.5 tons of material (From GNBC Office Area) has been shipped off site to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Manifest #	Date Shipped	Quantity	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility
016689001	12/15/2016	19.70	Tons	GNBC Office Area radioactive material		Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689002	12/15/2016	19.80	Tons	GNBC Office Area radioactive material		Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689003	12/15/2016	19.00	Tons	GNBC Office Area radioactive material		Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689004							
016689005							
016689006							
016689007							
	Total	58.50	Tons				

2.2 Planning Section

2.2.1 Anticipated Activities

- On December 19, 2016, the GNBC Office Area blueprints to be submitted to the City of Niagara Code Enforcement Office to initiate permit process.
- Backfilling of GNBC Office Area and Area 5 with clean material.
- Rebuild of GNBC Office Area once permits approved.
- Initiation of transport & disposal of Area 5 Medium Concentration Material on December 19, 2016.
- USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

- Disposal of of Area 5 Medium Concentration Material

2.2.1.2 Next Steps

- ERRS Funding increase

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.
On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$1,950,000.00	$1,693,335.48	$256,664.52	13.16%
TAT/START	$518,000.00	$338,430.29	$179,569.71	34.67%
Intramural Costs				
Total Site Costs	$2,468,000.00	$2,031,765.77	$436,234.23	17.68%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Jimenez
OSC Pellegrino
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman

Weston: One Lead and Two Technician
Guardian: RM, FCA, Two Operators and Three Techs

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #11**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 1/28/2017
Reporting Period: 12/17/2017 through 01/28/2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Removal Assessment and Removal Action

1.1.2 Site Description

The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

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naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino
From December 17, 2016 through January 28, 2017 the following tasks/events occurred:

Starting on December 13, 2016, the excavated radioactive waste material from Niagara Falls Boulevard Site has been shipped to US Ecology in Michigan. Throughout the current time range, EPA, Weston and GES continued to manage and stage the material for transport off-site. This included blending the material as per Health Physicist Nguyen methodology in order to meet US Ecology acceptance criteria. All the material removed from the GNBC Office Area has been transported properly off-site. As of January 25, 2017, all material from Area 5 that was excavated and temporarily relocated to a secured non-containerized staging area on-site has been properly transported to US Ecology. The remaining material that was excavated from Area 5 has been stored in super sacks, labeled, weighed and stored inside secured Conex Containers on-site awaiting future disposal.

On January 09, 2017, $435,000.00 was authorized in mitigation funding.

On January 10, 2017, HP Nguyen's blending proposal for GNBC Office Area Boxes and Medium Concentration was approved by US Ecology.

The City of Niagara Falls approved the blue print plans for the GNBC Office Area construction. The GES bid for construction contractor was sent out on January 11, 2017. The Pre-Bid Site Visit was conducted on January 17, 2017. The proposal responses were turned into GES close of business on January 26, 2017.

The trees that were removed from Area 5 during the excavation were labeled and staged. Those trees will now be gamma scanned and sampled prior to being removed off-site.

The High-Purity Germanium (HPGe) Detector continues to be utilized to analyze site soil samples in order to determine soil concentrations for operational planning.

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07 tons of material has been excavated from Area 5.

All of the material from the GNBC Office Area has been shipped off site to US Ecology in Michigan.

Approximately, 3,706.74 tons of material from Area 5 has been shipped off site to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Progress Metrics

Manifest #	Date Shipped	Quantity	Units	Waste Description	Waste Code	Method of Disposal	Disposal Facility
016689001	12/15/2016	18.98	Tons	GNBC Office Area radioactive material	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689002	12/15/2016	19.22	Tons	GNBC Office Area radioactive material	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689003	12/15/2016	18.34	Tons	GNBC Office Area radioactive material	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689004	12/19/2016	23.93	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689005	12/19/2016	24.00	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689006	12/19/2016	24.16	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689007	12/19/2016	23.79	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689008	12/19/2016	24.36	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689009	12/19/2016	24.60	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689010	12/19/2016	22.18	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689011	12/19/2016	24.66	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689012	12/19/2016	23.82	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689013	12/19/2016	22.48	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689014	12/20/2016	24.21	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689015	12/20/2016	19.97	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689016	12/20/2016	22.73	Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689017	12/20/2016	23.47Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689018	12/20/2016	24.78Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689019	12/20/2016	22.69Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689020	12/20/2016	23.53Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689021	12/20/2016	22.79Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689022	12/20/2016	21.72Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689023	12/20/2016	21.05Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689024	12/21/2016	20.53Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689025	12/21/2016	22.31Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689026	12/21/2016	23.95Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689027	12/21/2016	23.74Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689028	12/21/16	22.52Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689029	12/21/2016	22.32Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689030	12/21/2016	24.18Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689031	12/21/2016	22.84Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689032	12/21/2016	22.84Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689033	12/21/2016	23.51Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689034	1/5/2017	21.56Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689035	1/5/2017	22.10Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689036	1/5/2017	21.20Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689037	1/5/2017	19.88Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689038	1/5/2017	22.16Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689039	1/5/2017	20.78Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689040	1/5/2017	22.79Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689041	1/5/2017	22.03Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689042	1/5/2017	22.85Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689043	1/5/2017	21.80Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689044	1/6/2017	21.97Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689045	1/6/2017	23.07Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689046	1/6/2017	22.50Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689047	1/6/2017	22.70Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689048	1/6/2017	25.37Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689049	1/6/2017	24.98Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689050	1/6/2017	22.76Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689051	1/6/2017	20.57Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689052	1/6/2017	22.70Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689053	1/9/2017	23.44Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689054	1/9/2017	22.73Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689055	1/9/2017	22.70Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689056	1/9/2017	21.36Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689057	1/9/2017	22.48Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689058	1/9/2017	20.26Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689059	1/9/2017	24.69Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689060	1/9/2017	24.35Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689061	1/9/2017	24.13Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689062	1/9/2017	23.07Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689063	1/10/2017	21.04Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689064	1/10/2017	21.25Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689065	1/10/2017	22.43Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689066	1/10/2017	22.26Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689067	1/10/2017	22.41Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689068	1/10/2017	24.15Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689069	1/10/2017	23.78Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689070	1/10/2017	22.73Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689071	1/10/2017	24.47Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689072	1/10/2017	25.22Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689073	1/11/2017	20.44Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689074	1/11/2017	20.89Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689075	1/11/2017	25.58Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689076	1/11/2017	24.12Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689077	1/11/2017	22.02Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689078	1/11/2017	24.14Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689079	1/11/2017	23.55Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689080	1/11/2017	24.02Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689081	1/11/2017	22.68Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689082	1/11/2017	22.73Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689083	1/12/2017	22.79Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689084	1/12/2017	22.66Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689085	1/12/2017	24.17Tons	Area 5 - Medium Concentration Pile/GNBC Office	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689086	1/12/2017	24.66Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689087	1/12/2017	21.34Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689088	1/12/2017	23.50Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689089	1/12/2017	21.26Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689090	1/12/2017	23.11Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689091	1/12/2017	23.31Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689092	1/12/2017	21.24Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689093	1/13/2017	21.94Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689094	1/13/2017	21.92Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689095	1/13/2017	23.23Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689096	1/13/2017	23.16Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689097	1/13/2017	23.34Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689098	1/13/2017	22.49Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689099	1/13/2017	22.59Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689100	1/13/2017	22.21Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689101	1/13/2017	24.78Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689102	1/13/2017	23.64Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689103	1/17/2017	22.85Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689104	1/17/2017	23.32Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689105	1/17/2017	23.09Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689106	1/17/2017	22.82Tons	Area 5 - Medium Concentration Pile	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689107	1/17/2017	22.21Tons	Area 5 - Medium Concentration Pile & High/Low Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689108	1/17/2017	24.08Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689109	1/17/2017	23.02Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689110	1/17/2017	24.08Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689111	1/17/2017	23.31Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689112	1/17/2017	22.46Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689113	1/18/2017	23.94Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689114	1/18/2017	22.84Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689115	1/18/2017	23.15Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689116	1/18/2017	21.22Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689117	1/18/2017	22.41Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689118	1/18/2017	22.19Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689119	1/18/2017	19.90Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689120	1/18/2017	23.42Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689121	1/18/2017	22.60Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689122	1/18/2017	23.55Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689123	1/19/2017	21.54Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689124	1/19/2017	22.98Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689125	1/19/2017	21.69Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689126	1/19/2017	22.24Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689127	1/19/2017	24.39Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689128	1/19/2017	25.34Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689129	1/19/2017	21.87Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689130	1/19/2017	21.29Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689131	1/19/2017	23.19Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689132	1/19/2017	24.01Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689133	1/20/2017	22.53Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689134	1/20/2017	21.16Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689135	1/20/2017	23.01Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689136	1/20/2017	21.10Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689137	1/20/2017	22.61Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689138	1/20/2017	23.05Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689139	1/20/2017	23.62Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689140	1/20/2017	23.80Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689141	1/20/2017	22.60Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689142	1/20/2017	23.31Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689143	1/23/2017	20.03Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689144	1/23/2017	20.91Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689145	1/23/2017	22.36Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689146	1/23/2017	22.11Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689147	1/23/2017	22.36Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689148	1/23/2017	22.79Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689149	1/23/2017	22.40Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689150	1/23/2017	23.99Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689151	1/23/2017	21.83Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689152	1/23/2017	20.37Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689153	1/24/2017	26.02Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689154	1/24/2017	21.89Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689155	1/24/2017	20.35Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689156	1/24/2017	23.49Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689157	1/24/2017	22.33Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan

016689158	1/24/2017	21.86Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689159	1/24/2017	22.26Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689160	1/24/2017	23.19Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689161	1/24/2017	23.30Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689162	1/24/2017	22.68Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689163	1/25/2017	22.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689164	1/25/2017	22.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689165	1/25/2017	24.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689166	1/25/2017	22.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
16689167	1/25/2017	23.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
016689168	1/25/2017	22.00Tons	Area 5 - High/Low Concentration Blend	NORM/	Direct load into Dump Trailer to Landfill	US Ecology-Michigan
Total		3813.74Tons				

Highlighted weights are estimated

2.2 Planning Section

2.2.1 Anticipated Activities

Awarding of subcontractor construction bid.
Backfilling of GNBC Office Area and Area 5 with clean material.
Rebuild of GNBC Office Area once permits approved.
Interview with Reporter Dan Telvock.
Gamma scan and sampling of Area 5 Trees.
Gamma scan and sampling of small excavated section of Area 5.

2.2.1.1 Planned Response Activities

Rebuild of GNBC Office Area once permits approved.

2.2.1.2 Next Steps

Plan assessment of parking lot.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $505,000.00.

On January 09, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,385,000.00	$2,308,446.47	$76,553.53	3.21%
TAT/START	$518,000.00	$425,113.68	$92,886.32	17.93%
Intramural Costs				
Total Site Costs	$2,903,000.00	$2,733,560.15	$169,439.85	5.84%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Jimenez
OSC Pellegrino
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman
Weston: One Lead and One Technician
Guardian: RM, FCA, Two Operators and One Tech

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #12**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 3/22/2017
Reporting Period: 01/23/2017 through 03/23/2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino
From January 29, 2017 through March 23, 2017 the following tasks/events occurred:
Starting on December 13, 2016, the excavated radioactive waste material from Niagara Falls Boulevard Site has been shipped to US Ecology in Michigan. Throughout the current time range, EPA, Weston and GES continued to manage and stage the material for transport off-site. This included blending the material as per Health Physicist Nguyen methodology in order to meet US Ecology acceptance criteria. All the material removed from the GNBC Office Area has been transported properly off-site. As of January 25, 2017, all material from Area 5 that was excavated and temporarily relocated to a secured non-containerized staging area on-site has been properly transported to US Ecology. The remaining 173 tons of material that was excavated from Area 5 has been stored in super sacks, labeled, weighed and stored inside secured Conex Containers on-site awaiting future disposal.
On January 31, 2017, the construction subcontract was awarded for the rebuild of the GNBC Office Area.

On February 02, 2017, OSC Daly, HP Lyndsey Nguyen and EPA Public Affairs Official Basile conducted a telephone interview with reporter Dan Telvock (Investigative Post/Channel 2 News). This was a follow up interview from December 2016 in order to obtain more technical radiological site information from Ms. Nguyen.

On February 03, 2017, the construction subcontractor poured the concrete in GNBC Office Area.

During this time range, approximately 100 trees that were previously removed from Area 5 during the excavation of that area, were assessed. Area 5 has been excavated of radioactive material and backfilled. With the area now being a background section of the property, the Area 5 trees were returned to the location to perform assessment of the trees. Every tree was gamma scanned with a Ludlum Pancake Probe. Also, 15 trees were selected for quantitative analysis utilizing the on-site HPGe instrument. A biased approach was used to determine which trees to sample based on previous analytical soil/slag data in Area 5. The trees in the higher concentration locations were selected. The wood chips obtained from the tree removal were also analyzed via HPGe. The results of gamma scan from each individual tree, as well the pile of trees, showed no levels exceeding the SSSL. In addition, the results of the tree boring samples, correlating with the highest elevated locations within Area 5 and analyzed quantitatively with the onsite HPGe, indicated that trees were not significantly different than the background wood samples or background soil samples. By these results, no radioactive material from Area 5 was taken up by the trees via the root system, absorbed into the trees, nor adhered to the exterior of the trees.

From February 13, 2017 through March 23, 2017, the construction subcontractor performed the rebuild of GNBC Office Area. These activities included concrete cuts, plumbing, carpentry, electrical, HVAC, tiling, carpet installation and painting. As of the date of this report, OSC Lisichenko is on standby to perform preliminary walk through of the rebuild

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07? tons of material has been excavated from Area 5.

All of the material from the GNBC Office Area has been shipped off site to US Ecology in Michigan.

Approximately, 3,706.74 tons of material from Area 5 has been shipped off site to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Manifest Data

Manifest Data available in the Documents Section (requires login).

Click here to view Manifest Data Table.

2.2 Planning Section

2.2.1 Anticipated Activities

Completion of GNBC Office Area reconstruction.
Assessment activities including gamma survey and soil sampling/analysis tentatively planned for May 2017.

2.2.1.1 Planned Response Activities

None at this time

2.2.1.2 Next Steps

Plan assessment of parking lot.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $505,000.00.

On January 09, 2017, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,385,000.00	$2,354,696.10	$30,303.90	1.27%
TAT/START	$518,000.00	$476,239.54	$41,760.46	8.06%
Intramural Costs				
Total Site Costs	$2,903,000.00	$2,830,935.64	$72,064.36	2.48%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Jimenez
OSC Pellegrino
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman
Weston: One Lead and One Technician
Guardian: RM, FCA, Two Operators and One Tech

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #13**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
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Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 4/28/2017
Reporting Period: 03/24/2017 through 04/28/2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino
From March 23, 2017 through April 28, 2017 the following tasks/events occurred:
From February 13, 2017 through March 23, 2017, the construction subcontractor performed the rebuild of GNBC Office Area. These activities included concrete cuts, plumbing, carpentry, electrical, HVAC, tiling, carpet installation and painting. OSC Lisichenko has been working with Guardian personnel to ensure minor construction tasks are completed. As of the date of this report, there are a few tasks pending for completion.

The trees that were located in Area 5 were gamma scanned and sampled. All data collected indicated no significant difference in comparison to background readings. During this time range, the trees were removed off-site for use by a local farmer.

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07? tons of material has been excavated from Area 5.

All of the material from the GNBC Office Area has been shipped off site to US Ecology in Michigan.

Approximately, 3,706.74 tons of material from Area 5 has been shipped off site to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Manifest Data

Manifest Data available in the Documents Section (requires login).

Click here to view Manifest Data Table.

2.2 Planning Section

2.2.1 Anticipated Activities

Completion of GNBC Office Area reconstruction punch list.
Assessment activities including gamma survey and soil sampling/analysis planned for to start on May 8, 2017 through May 19, 2017.

USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

None at this time

2.2.1.2 Next Steps

Plan assessment of parking lot.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal

action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $505,000.00.

On January 09, 2017, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,385,000.00	$2,378,340.00	$6,660.00	0.28%
TAT/START	$518,000.00	$483,992.60	$34,007.40	6.57%
Intramural Costs				
Total Site Costs	$2,903,000.00	$2,862,332.60	$40,667.40	1.40%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Jimenez
OSC Pellegrino
EPA ERT Health Physicist Lyndsey Nguyen
EPA ERT Health Physicist Dave Kappelman
Weston: One Lead and One Technician
Guardian: RM, FCA, Two Operators and One Tech

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #14**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 6/8/2017
Reporting Period: April 29, 2017 through June 08, 2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino
From April 29, 2017 through June 8, 2017 the following tasks/events occurred:

From February 13, 2017 through March 23, 2017, the construction subcontractor performed the rebuild of GNBC Office Area. These activities included concrete cuts, plumbing, carpentry, electrical, HVAC, tiling, carpet installation and painting. OSC Lisichenko has been working with Guardian personnel to ensure minor construction tasks are completed during this time range. As of the date of this report, there are a few minor tasks pending for completion but overall the GNBC Office Area is complete.

The trees that were located in Area 5 were gamma scanned and sampled. All data collected indicated no significant difference in comparison to background readings. During this time range, some trees were removed off-site for use by a local farmer. The majority of the trees are still located in Area 5.

On May 03, 2017, $215,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,600,000.00.

From May 08, 2017 through May 12, 2017, EPA and Weston excavated 20 sample pits which included two background sample excavations. From these sample pits, 86 slag/soil samples were collected at various depths.

From May 08, 2017 through June 06, 2017, Weston Technician analyzed the 86 at the NFB Site lab trailer via the HPGe.

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07? tons of material has been excavated from Area 5.

All of the material from the GNBC Office Area has been shipped off site to US Ecology in Michigan.

Approximately, 3,706.74 tons of material from Area 5 has been shipped off site to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Manifest Data

Manifest Data available in the Documents Section (requires login).

Click here to view Manifest Data Table.

2.2 Planning Section

2.2.1 Anticipated Activities

Completion of GNBC Office Area reconstruction punch list.
Select slag/soil samples will be send to a certified laboratory based on HPGe field analysis data.
Pump rainwater from Area 5, complete gamma scan and sampling from remainder of Area 5 and backfill (June 8th through June 16th, 2017).
Transport and dispose the remaining staged material from Area 5 (June 12th through June 16th, 2017).
Excavation, gamma survey, post excavation sampling, backfill and asphalt of Area 2 (Parking lot between Rapids Bowling Alley and GNBC). This work is anticipated to be performed towards the end of July/early August 2017.

USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

Tentative plans to perform excavation, gamma survey, post excavation sampling, backfill and asphalt of Area 2 (Parking lot between Rapids Bowling Alley and GNBC). This work is anticipated to be performed towards the end of July/early August 2017.

2.2.1.2 Next Steps

Transport and disposal of the remaining staged material from Area 5.

2.2.2 Issues

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, $950,000.00 was authorized in mitigation funding.

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $505,000.00.

On January 09, 2017, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00.

On May 03, 2017, $215,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,600,000.00

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,600,000.00	$2,379,126.91	$220,873.09	8.50%
TAT/START	$518,000.00	$483,992.60	$34,007.40	6.57%
Intramural Costs				
Total Site Costs	$3,118,000.00	$2,863,119.51	$254,880.49	8.17%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer

GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies

NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Lisichenko
EPA ERT Health Physicist Lyndsey Nguyen
Weston: One Lead and One Technician
Guardian: RM, Two Operators, FCA

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #15**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
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Cynthia Costello, NYS DOH
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Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 7/15/2017
Reporting Period: 06/09/2017 through 07/15/2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category

Removal Assessment and Removal Action

1.1.2 Site Description

The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino
From June 9, 2017 through July 15, 2017 the following tasks/events occurred:

Completion of GNBC Office Area reconstruction punch list.
Select slag/soil samples were sent to a certified laboratory based on HPGe field analysis data.
Rainwater was removed from a non-contaminated pit of Area 5. The gamma scan of this area was completed and post excavation samples were collected and analyzed.
The remainder of Area 5 was backfilled with clean material.
Transport and disposal of the remaining staged material from Area 5.
Public Affairs Officer, Mike Basile, visited the site

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07 tons of material (which includes the low concentration/background material) has been excavated from Area 5.
Approximately, 762 tons of material from Area 5 was shipped off site to US Ecology in Michigan during this time range which completes the disposal of all the excavated staged material. In total, approximately 4,574 tons of material has been shipped to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Manifest Data

Manifest Data available in the Documents Section (requires login).

Click here to view Manifest Data Table.

2.2 Planning Section

2.2.1 Anticipated Activities

EPA activities at the Niagara Falls Boulevard site have been suspended for the time being due to the uncertainty with the current budget situation. Funding to complete all of the work, rather than incremental funding, is preferred in order to avoid shutdown and start-up costs, security costs and other maintenance costs that would accrue in between periods of work. Thus, de-mobilization of the site will commence on July 31, 2017 with an expected end date of August 11, 2017. EPA anticipates returning to the NFB Site for removal work in Spring 2018 at the earliest.

USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities

There are no planned response activities at this time.

2.2.1.2 Next Steps

Transport and disposal of the remaining sample jar materials. Demobilize trailers and equipment from site.

2.2.2 Issues

Lack of Funding

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, an additional $950,000.00 was authorized in mitigation funding to Task Order 23 with Guardian Environmental Solutions..

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Original Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $507,000.00.

On January 09, 2017, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00.

On May 03, 2017, $215,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,600,000.00

On June 29, 2017, an additional $50,000.00 was requested in mitigation funding to Task Order 23 with Guardian Environmental Solutions. The new Task Order ceiling will be $2,650,000 once authorized.

On July 15, 2017, OSC Daly transferred $100,000.00 from extramural cost (Original Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $618,000.00. Remaining extramural cost is $407,000.00.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,600,000.00	$2,557,001.84	$42,998.16	1.65%
TAT/START	$618,000.00	$510,083.60	$107,916.40	17.46%
Intramural Costs				
Total Site Costs	$3,218,000.00	$3,067,085.44	$150,914.56	4.69%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site

OSC Daly
OSC Lisichenko
EPA ERT Health Physicist Lyndsey Nguyen
Weston: One Lead and One Technician
Guardian: RM, Two Operators, FCA

5. Definition of Terms

No information available at this time.

6. Additional sources of information

No information available at this time.

7. Situational Reference Materials

No information available at this time.

U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Niagara Falls Boulevard Radiological Site - Removal Polrep

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region II

Subject: **POLREP #16**
Niagara Falls Boulevard Site Removal Action
Niagara Falls Boulevard Radiological Site
A23Q
Niagara Falls, NY
Latitude: 43.0965960 Longitude: -78.9520670

To: Pat Evangelista, Superfund & Emergency Management Division
Joe Rotola, USEPA Region 02
Dan Harkay, US EPA Region 2
James Doyle, USEPA Region 02
Margo Ludmer, USEPA Region 02
David Kappelman, USEPA ERT
Beckett Grealish, USEPA Region 02
Carsen Mata, USEPA Region 02
Michael Basile, USEPA Region 02
Andrew Raddant, USDOI
Timothy Rice, NYS DEC
Chad Staniszewski, NYS DEC
Thomas Papura, NYS DEC
Kenneth Martin, NYS DEC
Cynthia Costello, NYS DOH
Matt Forcucci, NYSDOH
Alex Damiani, NYSDOH
Mai Tran, NYSDOH
Conor Vandemark, NYSDOH
Daniel Stapleton, NCHD
Paul Dicky, NCHD
Tim Benton, Weston Solutions

From: Eric Daly, On-Scene Coordinator
Date: 8/13/2017
Reporting Period: July 12, 2017 through August 13, 2017

1. Introduction

1.1 Background

Site Number:	A23Q	**Contract Number:**	
D.O. Number:		**Action Memo Date:**	9/27/2016
Response Authority:	CERCLA	**Response Type:**	Time-Critical
Response Lead:	EPA	**Incident Category:**	Removal Action
NPL Status:	Non NPL	**Operable Unit:**	
Mobilization Date:	6/1/2016	**Start Date:**	6/1/2016
Demob Date:		**Completion Date:**	
CERCLIS ID:	NYN000206699	**RCRIS ID:**	
ERNS No.:		**State Notification:**	
FPN#:		**Reimbursable Account #:**	

1.1.1 Incident Category
Removal Assessment and Removal Action

1.1.2 Site Description
The 9540 Niagara Falls Boulevard site (CERCLIS ID NYN000206699), hereinafter referred to as “the NFB site” or “the site”, is located in a mixed commercial and residential area of Niagara Falls, New York. The site consists of two parcels, namely 9524 and 9540 Niagara Falls Boulevard. This site encompasses approximately 2.53 acres. Currently, the 9524 Niagara Falls Boulevard property contains a bowling alley and an asphalt parking lot; the 9540 Niagara Falls Boulevard property contains a vacant building and an asphalt parking lot. The properties are bordered to the north by a wooded area; to the east by a church; to the south by Niagara Falls Boulevard, beyond which is a residential area; and to the west by a hotel and residential area.

In 1978, the U.S. Department of Energy conducted an aerial radiological survey of the Niagara Falls region

and found more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from the Union Carbide facility located on 47th Street in Niagara Falls was used as fill on the properties prior to paving. The Union Carbide facility processed ore containing naturally-occurring high levels of uranium and thorium to extract niobium. The slag contained sufficient quantities of uranium and thorium to be classified as a licensable radioactive source material. Union Carbide subsequently obtained a license from the Atomic Energy Commission, now the Nuclear Regulatory Commission, and the State of New York; however, the slag had been used as fill throughout the Niagara Falls region prior to licensing. Based on the original survey and subsequent investigations, it is believed that the radioactive Union Carbide slag was deposited on the NFB site.

1.1.2.1 Location
9524-9540 Niagara Falls Boulevard, Niagara Falls, NY

1.1.2.2 Description of Threat
Radioactive contamination

1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results
In September/October 2006 and May 2007, NYSDEC conducted radiological surveys of the interior and exterior of both properties on several occasions using both an Exploranium-135 and Ludlum 2221 detectors. With the exception of an office area and storage space at 9540 Niagara Falls Boulevard that was constructed after the original building directly on top of the asphalt parking lot, interior radiation levels were relatively low. The highest reading in the newer area was 115 µR/hr; elsewhere throughout the building, radiation levels generally ranged between 10 and 20 µR/hr. Exterior readings taken at waist height generally ranged between 10 and 350 µR/hr, while the maximum reading of 600 µR/hr was recorded on contact (i.e., at the ground surface). At a fenced area behind the building located at 9540 Niagara Falls Boulevard, waist-high readings ranged between 200 and 450 µR/hr, and on-contact readings ranged between 450 and 750 µR/hr. Elevated readings were also observed on the swath of grass between the 9524 Niagara Falls Boulevard property and the adjacent property to the west that contains a hotel, and in the marshy area beyond the parking lot behind the buildings. Two biased samples of slag were collected from locations that exhibited elevated static Ludlum detector readings: one sample was collected from an area of loose blacktop that indicated readings of 515,905 cpm on the Ludlum detector, and one slag sample was collected in the marshy area that indicated readings of 728,235 cpm on the Ludlum detector.

During a reconnaissance performed by the NYSDOH and NYSDEC on July 9, 2013, screening activities showed radiation levels at 200 µR/hr with a hand-held PIC unit around an area of broken asphalt and 500 µR/hr from a soil pile containing slag at the NFB site. Readings over 600,000 cpm were recorded with a sodium iodide 2x2 scintillation detector from the soil and slag pile.

The Niagara Falls Boulevard Site (Site) was referred to the EPA by the NYSDEC and NYSDOH on July 21, 2013. No other removal actions have been taken by other government or private parties prior to this request.

On September 10, 2013, WESTON conducted a gamma radiation screening of the 9524 Niagara Falls Boulevard property using a Ludlum 2221 Scaler Ratemeter. On December 4–5, 2013, further radiological survey information was obtained from the 9524 and 9540 Niagara Falls Boulevard properties, as well as the church property located further east of the two site parcels. The highest gamma radiation screening results were recorded from the exposed soil area in the rear, northern portion of the 9540 Niagara Falls Boulevard property.

On December 5–7, 2013, WESTON documented the areas of observed contamination at the NFB site. The areas of observed contamination were delineated by measuring the gamma radiation exposure rates, and determining where the gamma radiation exposure rate around the source equals or exceeds two times the gamma radiation at site-specific background rates. The areas of observed contamination are defined by site-attributable gamma radiation exposure rates, as measured by a survey instrument held 1 meter above the ground surface, which equal or exceed two times the site-specific background gamma radiation exposure rate. At the NFB site, an area of approximately 168,832 ft^2 was found to have gamma radiation levels which exceed two times the background measurement of 8,391 cpm. PIC data were also collected at several points to confirm the boundary.

On December 11, 2013, WESTON collected a total of 16 soil samples (including one environmental duplicate sample) and three slag samples from fifteen boreholes advanced throughout the NFB site and the First Assembly Church property located directly adjacent to the east/northeast of the site property, using hollow-stem auger drilling methods. The two soil samples collected on the First Assembly Church property are to document background conditions. At each sample location, soil samples were collected directly beneath slag; at locations where slag was not present, the soil sample was collected at the equivalent depth interval.

The soil samples were analyzed for metals by inductively coupled plasma (ICP) technique and mercury by manual cold vapor technique in accordance with SW-846 Method 6010C and 7471B, respectively. In addition, soil and slag samples were analyzed for isotopic thorium and isotopic uranium by alpha spectrometry according to DOE method A-01-R, and radium-226 and radium-228 by gamma spectrometry according to DOE Method GA-01-R. Analytical results indicate concentrations of radionuclides found in the slag and soil to be significantly higher than at background conditions (i.e., greater than 2x background concentrations).

On April 28, 2014, EPA Contractor personnel collected radon and thoron concentration measurements from locations on and in the vicinity of the NFB site. At the selected locations in background areas, above the source material, and off the source area, radon and thoron concentration measurements in pCi/L were collected with RAD7 radon detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. The measurements included uncertainty values, which were taken into account to calculate adjusted concentrations for evaluation of observed release in the air migration pathway. There were no radon or thoron concentrations that exceeded the site-specific background, nor were there

any adjusted concentrations that equaled or exceeded a value two standard deviations above the mean site-specific background concentration for that radionuclide in that type of sample (i.e., there is no evidence of an observed release to air from site sources).

Based on the Pre-Remedial Evaluation, the site did not meet the minimum criteria necessary to be placed on EPA's "National Priorities List", a list of hazardous waste sites in the U.S. which are eligible for long-term cleanup financed under the federal Superfund program. However, it was subsequently determined that material contaminated with radiation was located beneath the asphalt parking lot shared by the bowling alley and a building supply center. EPA determined that the Agency would further assess the site to determine if an action under EPA's short term, or "removal" program was warranted.

2. Current Activities

2.1 Operations Section

2.1.1 Narrative

Niagara Falls Boulevard Site-OSC Daly/OSC Pellegrino/OSC Lisichenko
From July 12, 2017 through August 13, 2017 the following tasks/events occurred:
From July 12 through July 28, 2017 Weston conducted HPGe analysis on leftover slag/soil sample bags/jars from the NFB assessment work. Weston organized and weighed 427 soil/slag samples in preparation for disposal.

On July 13, 2017, OSC Daly informed all site property representative, local, county and state agency that the removal activities at the Niagara County Sites will discontinue until at least Spring 2018 due to EPA Removal Program funding limitation.

EPA, Weston, and GES mobilized to the site from July 31 through August 11, 2017 to perform the following activities:
*The HPGe instrument was disassemble and transported by Health Physicist Kappelman to EPA Edison, NJ Warehouse for storage.
*Blending calculations of 427 soil/slag samples were performed by Health Physicist Nguyen.
*One 1.5 cubic yard super sack of leftover slag/soil sample bags/jars and one 1.5 cubic yard super sack was loaded into a box truck and transported to US Ecology in Michigan for final disposal.
Completion of Area 5 by relocating remaining trees and bordering the west side of Area 5 with pressure treated timbers.
*Repairing of Area 7 fencing.
*Grading and asphalt installation of Southeast pit (from previous water line break) of Rapids Bowling Alley.
*Filling in all pot holes throughout the parking lot with asphalt.
*Specific slag types were identified by Health Physicist Nguyen and shipped out by Weston for analytical analysis (radiological/metals).
*Electric shut down of all four office trailers.
*All storage containers and office trailers were emptied, cleaned, gamma survey and swiped. All containers were cleared for radiation and removal off site.
*Relocation of Rapid Bowling Alley materials from storage Conex Box to GNBC Warehouse #3.
*Demobilization of two Conex Boxes and all four office trailers.
*All EPA, Weston, and GES equipment was transported off site.

Public Affairs Officer, Mike Basile, visited the site. Reporter Dan Telvock discussed Niagara County Site status with OSC Daly and Mike Basile via phone interview. Mike Basile will work with Public Affairs Office with any future media requests during this inactive phase.

EPA's Buffalo/Niagara Area On-Scene Coordinator, Peter Lisichenko, will periodically inspect the control measures at each Niagara County Site during this inactive phase.

2.1.2 Response Actions to Date

To date, approximately 107 tons of material has been removed from the GNBC Front Office Area and approximately 4,442.07 tons of material (which includes the low concentration/background material) has been excavated from Area 5.

Approximately, 2.25 tons of leftover soil/slag sample material from NFB assessment work was shipped off site to US Ecology in Michigan during this time range which completes the disposal of all the excavated material. In total, approximately 4,576.07 tons of material has been shipped to US Ecology in Michigan.

2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)

PRPs are being investigated by USEPA Enforcement Team

2.1.4 Manifest Data

Manifest Data available in the Documents Section (requires login).

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2.2 Planning Section

2.2.1 Anticipated Activities

EPA activities at the Niagara Falls Boulevard site have been suspended for the time being due to the

uncertainty with the current budget situation. Funding to complete all of the work, rather than incremental funding, is preferred in order to avoid shutdown and start-up costs, security costs and other maintenance costs that would accrue in between periods of work. Demobilization of the site was completed on August 11, 2017. EPA anticipates returning to the NFB Site for removal work in Spring 2018 at the earliest.

USEPA has been coordinating with NYS, Niagara County, and local representatives throughout the assessment/removal process.

2.2.1.1 Planned Response Activities
There are no planned response activities at this time.

2.2.1.2 Next Steps
Review analytical data.
Estimate updated total excavation and removal costs.
Enforcement research.

2.2.2 Issues
Lack of Removal Program Funding.

2.3 Logistics Section

No information available at this time.

2.4 Finance Section

2.4.1 Narrative

On May 13, 2016, ERRD Director authorized verbal funding in the amount of $500,000.00 in mitigation funding and $100,000.00 in RST contractor funding for a total project ceiling of $600,000.00 to initiate an emergency Comprehensive Environmental Response Compensation and Liability Act (CERCLA) removal action at the Niagara Falls Boulevard Site.

On July 14, 2016, the ERRD Deputy Director verbally authorized $500,000 in mitigation funding for a total project ceiling of $1,100,000.00 to continue the CERCLA removal action at the Niagara Falls Boulevard Site.

On September 28, 2016, the Niagara Falls Boulevard Site Action Memo was signed by USEPA Headquarters.

On September 29, 2016, an additional $950,000.00 was authorized in mitigation funding to Task Order 23 with Guardian Environmental Solutions..

On October 22, 2016, OSC Daly transferred $200,000.00 from extramural cost (Original Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $518,000.00. Remaining extramural cost is $507,000.00.

On January 09, 2017, $435,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,385,000.00.

On May 03, 2017, $215,000.00 was authorized in mitigation funding to bring the total mitigation ceiling to $2,600,000.00

On June 29, 2017, an additional $50,000.00 was requested in mitigation funding to Task Order 23 with Guardian Environmental Solutions. The new Task Order ceiling will be $2,650,000 once authorized.

On July 15, 2017, OSC Daly transferred $100,000.00 from extramural cost (Original Total $707,000.00) to the RST2 costs. The new total budgeted ceiling for RST2 is $618,000.00. Remaining extramural cost is $407,000.00.

On July 17, 2017, an additional $50,000.00 was authorized and added to mitigation funding forTask Order 23 with Guardian Environmental Solutions. The new Task Order ceiling is $2,650,000 once authorized.

Estimated Costs *

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
ERRS - Cleanup Contractor	$2,650,000.00	$2,557,001.84	$92,998.16	3.51%
TAT/START	$618,000.00	$510,083.60	$107,916.40	17.46%
Intramural Costs				

Total Site Costs	$3,268,000.00	$3,067,085.44	$200,914.56	6.15%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

2.5 Other Command Staff

2.5.1 Safety Officer
GES Health and Safety Officer worked with HP Lyndsey Nguyen and OSC Daly to improve existing HASP and site activities.

2.5.2 Liaison Officer

2.5.3 Information Officer

Mike Basile is the lead USEPA Public Affairs Official. Mr. Basile distributed the NFB Site Fact sheet to local officials, neighboring businesses, schools and communities on May 31, 2016 and June 1, 2016.

3. Participating Entities

3.1 Unified Command

3.2 Cooperating Agencies
NYS DEC
NYS DOH
Niagara County DOH

4. Personnel On Site
OSC Daly
OSC Lisichenko
EPA ERT Health Physicist Lyndsey Nguyen
Weston: One Lead and One Technician
Guardian: RM, Two Operators, FCA

5. Definition of Terms
No information available at this time.

6. Additional sources of information
No information available at this time.

7. Situational Reference Materials
No information available at this time.

APPENDICIES ON DISK

APPENDIX F: Historical Reports

APPENDIX G: Site Plans

APPENDIX H: DustTrak Air Monitoring Data

APPENDIX I: RADēCO Air Sampling Data

APPENDIX J: HPGe Analytical Data

APPENDIX K: Validated and Laboratory Analytical Reports

APPENDIX L: Chains of Custody Record

APPENDIX M: Disposal Manifests